JOINT EXTERNAL EVALUATION OF IHR CORE CAPACITIES

of the

KINGDOM OF THAILAND

Mission report:

June 26-30, 2017

World Health Organization

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Contents

Executive summary

Thailand has implemented the IHR since they were first introduced in 1969 and has been actively involved in improving the Regulation since the 1980s. Volunteering to host a joint external evaluation (JEE) mission represents a continuation of the country's engagement in, and leadership of, the IHR and is to be commended. This shows tremendous foresight and demonstrates the Government's commitment to providing world-class health care to each of its citizens.

Thailand should also be recognized for its role as a leader in the region in several technical areas, including responding to specific technical requests and humanitarian emergencies, and supporting ongoing capacity development. Many WHO Member States have benefitted from this support.

During the JEE mission, Thailand's capacities in 19 technical areas were evaluated through a peer-to-peer,

collaborative process that brought together Thai and JEE team subject matter experts. The presence of high-level representatives during the JEE mission from the multiple ministries, departments, agencies and other stakeholders, as well as their in-depth knowledge of the technical areas they manage was further evidence of Thailand's high level of commitment and achievement.

As recorded in this report, The JEE team scored Thailand's capabilities highly across the technical areas. These scores are a baseline and a way to measure progress. They also help prioritize more critical needs. However, the scores themselves do not improve health care for the citizens of in Thailand. What matters most is the priority action items.

During the JEE mission, the external evaluators developed two high level recommendations for Thailand. These are as follows:

Consolidate gains and ensure sustainability

Thailand has demonstrated high levels of capacity for implementing the IHR, and in order to ensure future sustainability and to maintain optimum levels of performance, relevant institutions must ensure:

- Regular monitoring and evaluation of existing mechanisms, processes and operations to identify gaps and inform the further development of national action plans for implementation by all sectors through a fully integrated One Health approach at the national, provincial and local levels;
- Sustained and strengthened capacity for health security through the adequate provision of resources in each technical area and through investment in the necessary skills and competencies at all levels.

Strengthen collaboration, while streamlining and operationalizing organizational structures

- In order to strengthen collaboration and cooperation, it is necessary to streamline complex structures, create clear lines of responsibility and collaborate at the operational, not just organizational level.
- Implement continuous practical interaction between agencies, leading to improved overall capacity for coordination. This could be achieved through sharing human resources.
- Review and strengthen public health emergency management systems through a collaborative approach that involves all sectors contributing to the research, surveillance, risk assessment, epidemiological analysis and control of emergency events.
- Ensure the integration of the private sector and communities as key stakeholders in the prevention, detection and response to all events.

The JEE team would like to thank our Thai colleagues who prepared a detailed and well-evidenced self-evaluation and gave excellent presentations during the mission. Thailand's experts are true professionals and were willing collaborators in the evaluation and development of priority actions.

The team would also like to acknowledge and commend the team of the Ministry of Public Health, who coordinated and organized this mission, as well as the wider Thai team for its unwavering support and commitment. The professionalism, transparency, and willingness of our hosts to seek solutions together with the team were instrumental to the success of this mission.

Thailand scores

Technical areas	Indicators	Score
National legislation, policy and financing	P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR (2005)	5
	P.1.2 The State can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with IHR (2005)	4
IHR coordination, communication and advocacy	P.2.1 A functional mechanism is established for the coordination and integration of relevant sectors in the implementation of IHR	4
Antimicrobial resistance	P.3.1 Antimicrobial resistance detection	4
	P.3.2 Surveillance of infections caused by antimicrobial-resistant pathogens	3
	P.3.3 Health care-associated infection (HCAI) prevention and control programmes	3
	P.3.4 Antimicrobial stewardship activities	2
Zoonotic diseases	P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens	4
	P.4.2 Veterinary or animal health workforce	4
	P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases are established and functional	4
Food safety	P.5.1 Mechanisms for multisectoral collaboration are established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases	3
Biosafety and biosecurity	P.6.1 Whole-of-government biosafety and biosecurity system is in place for human, animal and agriculture facilities	4
	P.6.2 Biosafety and biosecurity training and practices	4
Immunization	P.7.1 Vaccine coverage (measles) as part of national programme	5
	P.7.2 National vaccine access and delivery	5
National laboratory system	D.1.1 Laboratory testing for detection of priority diseases	4
	D.1.2 Specimen referral and transport system	4
	D.1.3 Effective modern point-of-care and laboratory-based diagnostics	4
	D.1.4 Laboratory quality system	3
Real-time surveillance	D.2.1 Indicator- and event-based surveillance systems	4
	D.2.2 Interoperable, interconnected, electronic real-time reporting system	4
	D.2.3 Integration and analysis of surveillance data	4
	D.2.4 Syndromic surveillance systems	4
Reporting	D.3.1 System for efficient reporting to FAO, OIE and WHO	3
	D.3.2 Reporting network and protocols in country	3
Workforce development	D.4.1 Human resources available to implement IHR core capacity requirements	4
	D.4.2 FETP[1] or other applied epidemiology training programme in place	5
	D.4.3 Workforce strategy	3
Preparedness	R.1.1 National multi-hazard public health emergency preparedness and response plan is developed and implemented	4
	R.1.2 Priority public health risks and resources are mapped and utilized	2

[1] FETP: Field epidemiology training programme

Emergency response operations	R.2.1 Capacity to activate emergency operations	3
	R.2.2 EOC operating procedures and plans	3
	R.2.3 Emergency operations programme	3
	R.2.4 Case management procedures implemented for IHR relevant hazards.	3
Linking public health and security authorities	R.3.1 Public health and security authorities (e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological event	4
Medical countermeasures and personnel deployment	R.4.1 System in place for sending and receiving medical countermeasures during a public health emergency	4
	R.4.2 System in place for sending and receiving health personnel during a public health emergency	4
Risk communication	R.5.1 Risk communication systems (plans, mechanisms, etc.)	4
	R.5.2 Internal and partner communication and coordination	4
	R.5.3 Public communication	4
	R.5.4 Communication engagement with affected communities	4
	R.5.5 Dynamic listening and rumour management	4
Points of entry	PoE.1 Routine capacities established at points of entry	4
	PoE.2 Effective public health response at points of entry	3
Chemical events	CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies	4
	CE.2 Enabling environment in place for management of chemical events	4
Radiation emergencies	RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	4
	RE.2 Enabling environment in place for management of radiation emergencies	4

Note on scoring of technical areas of the JEE tool

The JEE process is a peer-to-peer review and a collaborative effort between host country experts and JEE team members. In completing the self-evaluation, the first step in the JEE process, and as part of preparing for an external evaluation, host countries are asked to focus on providing information on their capabilities based on the indicators and technical questions included in the JEE tool.

The host country may score their self-evaluation or propose a score during the onsite visit with the JEE team. The entire external evaluation, including the discussions around the score, strengths/best practices, the areas which need strengthening, challenges and the priority actions, is done in a collaborative manner, with the JEE team members and host country experts seeking agreement.

Should there be significant and irreconcilable disagreement between the JEE team members and the host country experts, or among the JEE team, or among the host country experts, the JEE team lead will decide on the final score and this will be noted in the final report, along with the justification for each party's position.

PREVENT

National legislation, policy and financing

Introduction

The International Health Regulations (IHR) (2005) provide obligations and rights for States Parties. In some States Parties, implementation of the IHR (2005) may require new or modified legislation. Even if a new or revised legislation may not be specifically required, states may still choose to revise some regulations or other instruments in order to facilitate IHR implementation and maintenance in a more effective manner. Implementing legislation could serve to institutionalize and strengthen the role of IHR (2005) and operations within the State Party. It can also facilitate coordination among the different entities involved in their implementation. See detailed guidance on IHR (2005) implementation in national legislation at http://www.who.int/ihr/legal_issues/legislation/en/index.html. In addition, policies that identify national structures and responsibilities as well as the allocation of adequate financial resources are also important.

Target

Adequate legal framework for States Parties to support and enable the implementation of all their obligations, and rights to comply with and implement the IHR (2005). New or modified legislation in some States Parties for implementation of the IHR (2005). Where new or revised legislation may not be specifically required under the State Party's legal system, States may revise some legislation, regulations or other instruments in order to facilitate their implementation and maintenance in a more efficient, effective or beneficial manner. States Parties ensure provision of adequate funding for IHR implementation through the national budget or other mechanism.

Thailand level of capabilities

Thailand has implemented the IHR since they were first introduced in 1969 and has been actively involved in improving them since the 1980s. When the IHR (2005) entered into force in June 2007, the Thai government designated responsibility for implementing the Regulations to relevant ministries, including the Ministry of Public Health.

Thailand's Communicable Diseases Act, first published in 1980 and updated most recently in 2015, provides a legal basis for the effective implementation of the IHR. The Act is based on the findings from an assessment of laws and regulations for the implementation of the IHR.

The Act also provides for the establishment of committees at the national and provincial levels that have representation from various sectors and have the authority to develop policies, systems and guidance. Public health surveillance and response are governed by this act and legislation is in place for human, animal and environment health, points of entry, radiation and food safety.

Thailand has various cross-border agreements with neighbouring countries with regards to the control of communicable diseases, particularly for disease outbreaks. The country has also developed national action plans for the surveillance, prevention and control of communicable diseases. However, there are some challenges regarding the implementation of legislation, regulations and national action plans at the national and subnational levels. Some policy and decision makers and health care workers, for example, have difficulty interpreting IHR-related laws and legislation. This challenge could be alleviated by increased collaboration and cooperation. A dedicated budget line, or secured funding for the implementation of the Communicable Diseases Act would also be valuable for implementation of the IHR.

Recommendations for priority actions

- Accelerate the implementation of laws and regulations as defined in the Communicable Diseases Act (2015) through the development of auxiliary regulation and implementation guidelines for the national, provincial, and local levels.
- Advocate for the value of IHR-related legislation with policy and decision makers and train staff on the scope of relevant laws and authorities, drawing on international and domestic technical assistance as necessary.
- Ensure that there is a dedicated budget line or funding for the implementation of the Communicable Diseases Act in order to achieve full implementation of the IHR for health security.

Indicators and scores

P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR (2005) – Score 5

Strengths/best practices

- Public health surveillance and response is governed by various pieces of legislation, which are in place for human, animal and environment health, points of entry, radiation and food safety.
- An assessment of Thai laws for the implementation of the IHR informed the development of the Communicable Diseases Act (2015).
- The Communicable Diseases Act provides for the implementation of the IHR for the purposes of surveillance and prevention and control of communicable diseases; and sufficiently addresses cross-sectoral issues such as animal health, the environment and points of entry.
- The Communicable Diseases Act (2015) strengthens operations and cooperation between sectors, especially at the local level and at communicable disease control checkpoints.
- Thailand has developed a national action plan for the surveillance, prevention and control of communicable diseases or epidemics (2016-2018).
- Thailand has cross-border agreements with neighbouring countries regarding the control of communicable and emerging infectious diseases.

Areas that need strengthening/challenges

- Implementation of legislation and regulations at the national and sub-national levels.
- Strengthening collaboration and cooperation with relevant sectors, including the private sector, for implementation of the IHR by establishing mechanisms for regular information and resource sharing.
- Improved understanding of technical content among legislators and improved understanding of legislation and regulation among technical staff.
- Mechanisms to address rapidly changing or uncertain situations related to the spread of communicable diseases, especially new emerging infectious diseases.

P.1.2 The State can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with the IHR (2005) – Score 4

Strengths/best practices

- The Communicable Disease Act was developed following an assessment that identified how Thailand's legislation would need to be adjusted for the implementation of the IHR.

- National plans are available for cross-sectoral collaboration on communicable disease prevention and control during national emergencies.
- The Communicable Diseases Act facilitates implementation of the IHR by legislating for:
  - The establishment of committees at the national and sub-national levels;
  - The development of policies for surveillance and control of communicable diseases;
  - The development of an action plan and a monitoring and information management system;
  - Coordination with other sectors.

Areas that need strengthening/challenges

- Co-ordination and collaboration between different sectors for the implementation of the IHR capacities described in the national action plan.
- Ensuring increased participation, especially at the local level, in the review and drafting of legislation.
- A dedicated budget line and secure funding is required for the implementation of the Communicable Diseases Act and the IHR.

IHR coordination, communication and advocacy

Introduction

The effective implementation of the IHR requires multisectoral/multidisciplinary approaches through national partnerships for efficient and alert response systems. Coordination of nationwide resources, including the designation of a national IHR focal point, which is a national centre for IHR communications, is a key requisite for IHR implementation.

Target

Multisectoral/multidisciplinary approaches through national partnerships that allow efficient, alert and responsive systems for effective implementation of the IHR (2005). Coordinate nationwide resources, including sustainable functioning of a national IHR focal point – a national centre for IHR (2005) communications which is a key requisite for IHR (2005) implementation – that is accessible at all times. States Parties provide WHO with contact details of national IHR focal points, continuously update and annually confirm them.

Thailand level of capabilities

Thailand implemented the IHR through a Cabinet Resolution in June 2007 and today demonstrates developed capabilities in IHR coordination. The country has a National Focal Point for all IHR activities and a National IHR Committee.

The Department of Disease Control, within the Ministry of Public Health is the National IHR Focal Point. The National IHR Committee currently includes representatives from 18 ministries and ministry-level organizations and operates through five sub-committees and five working groups.

Following a multi-sectorial approach, all sub-committees and working groups are composed of members from all relevant agencies. The sub-committees serve to coordinate across technical areas and the coordination sub-committee coordinates across sectors and ministries. Functional mechanisms for intersectoral and multidisciplinary collaboration are updated each year.

The National IHR Committee meets at least once a year and organizes ad hoc meetings during public health events. The sub-committees and working groups meet on a more regular basis. The National IHR Committee benefits from its own website and facebook page.

These collaboration mechanisms operate at the national level, but there are also examples of collaboration at the regional level—for example between animal and human health surveillance units working together according to the One Health approach.

Overall, Thailand's coordination mechanism appears to be very well organized. It is administratively complex, however. This could lead to siloed thinking and meeting-fatigue among experts who are involved in several committees and working groups.

Recommendations for priority actions

- Regularly evaluate coordination mechanisms and processes; including evaluation of the roles, responsibilities and effectiveness of the National IHR Focal Point and the National IHR Committee on an annual basis and after IHR-related events and exercises.

- Develop action plans for improved coordination, based on these evaluation activities.
- Develop standard operating procedures for IHR coordination and establish communication mechanisms between the National IHR Focal Point and relevant sectors.

Indicators and scores

P.2.1 A functional mechanism established for the coordination and integration of relevant sectors in the implementation of IHR – Score 4

Strengths/best practices

- The IHR coordination mechanism is embedded in legislation (A Cabinet resolution from 2007), giving the Ministry of Public Health the mandate to coordinate IHR implementation across sectors.
- The National IHR Committee and four technical sub-committees (on surveillance, response and control; laboratories; points of entry; and Global Health Security Agenda and the IHR) provide a strong IHR coordination mechanism. There is an additional sub-committee on coordination, which brings together representatives working on communicable diseases, zoonoses, food safety, chemical events and radiation emergencies.
- The National IHR Committee has functioned well during actual public health events, including the MERS-CoV, Ebola and Zika outbreaks.

Areas that need strengthening/challenges

- More regular and consistent action planning following events and exercises.
- Further expansion of the national coordination mechanism could lead to it becoming overly bureaucratic and ineffective.
- Increased clarity is needed on the roles and responsibilities of various ministries to enable efficient scale-up during serious health events.
- Inter-sectoral coordination at the regional and local level is not as strong as at the national level.
- There is no regular evaluation of communication and coordination mechanisms, nor standard operating procedures for coordination and communication between the National Focal Point and relevant sectors, agencies and ministries.
- In addition to high-level coordination through committees, consideration should be given to permanent coordination on key issues through sharing staff between agencies.

Antimicrobial resistance

Introduction

Bacteria and other microbes evolve in response to their environment and inevitably develop mechanisms to resist being killed by antimicrobial agents. For many decades, the problem was manageable as the growth of resistance was slow and the pharmaceutical industry continued to create new antibiotics.

Over the past decade, however, this problem has become a crisis. Antimicrobial resistance is evolving at an alarming rate and is outpacing the development of new countermeasures capable of thwarting infections in humans. This situation threatens patient care, economic growth, public health, agriculture, economic security and national security.

Target

Support work coordinated by FAO, OIE and WHO to develop an integrated global package of activities to combat antimicrobial resistance, spanning human, animal, agricultural, food and environmental aspects (i.e. a One Health approach). Each country has: (i) its own national comprehensive plan to combat antimicrobial resistance; (ii) strengthened surveillance and laboratory capacity at the national and international levels following international standards developed as per the framework of the Global Action Plan; and (iii) improved conservation of existing treatments and collaboration to support the sustainable development of new antibiotics, alternative treatments, preventive measures and rapid point-of-care diagnostics, including systems to preserve new antibiotics..

Thailand level of capabilities

There is a high disease burden associated with antimicrobial resistance (AMR) in Thailand. In 2010, 88 000 infections and 30 000 deaths were attributed to AMR, as well as indirect costs of more than US $1 billion.

Important AMR pathogens include carbapenem-resistant Acinetobacter baumannii, Pseudomonas aeruginosa, and Enterobacteriacea, vancomycin-resistant enterococci, extended-spectrum beta-lactamase producing Gram-negative bacteria, multidrug-resistant tuberculosis and extensively drug-resistant tuberculosis. Antimicrobial consumption accounts for 15-20% of total medication costs in the human health sector and 50% of antimicrobials consumed are antibiotics.

Thailand has put many programmes, systems, policies, and initiatives in place to tackle AMR. Before 2014 there was limited government coordination across agencies and sectors on AMR due to the lack of a national strategy on AMR. However, AMR was included in two national policies: the National Strategy on Pharmaceutical System Development (which focuses on the rational use of drugs including antimicrobials) and the National Strategy on Emerging Infectious Diseases (which focuses on prevention and containment of AMR using a One Health approach). The National Strategic Plan on AMR (2017-2021), which was developed in collaboration between multiple sectors, aims to increase coordination on AMR across government.

The National AMR Surveillance Center was established in 1998 in order to provide continuous reporting on AMR. The Center's surveillance network initially relied on 28 regional hospitals, but now covers more than 90 surveillance sites located in all 77 provinces.

The surveillance of infections caused by AMR pathogens is conducted through both routine surveillance and active case finding. Thailand is currently drafting its first national plan on healthcare-associated infection prevention and control.

Thailand has programmes and policies at various levels to promote the appropriate use of antimicrobials and increase public awareness. These include the Antibiotics Smart Use Programme, Antibiotic Awareness Day and a rational drug use policy for hospitals. Although Thailand does not have a comprehensive national plan for antimicrobial stewardship, stewardship plans do exist for specific areas, for example on reducing the unnecessary use of antibiotics in upper respiratory infections, acute diarrhea and simple wounds. There are also some antimicrobial stewardship plans for broad-spectrum antimicrobial agents in hospitalized patients. In the animal health sector, initiatives and pilot projects target the reduction of antibiotic use in specific livestock and poultry farms. Antimicrobial stewardship plans are not yet available in other areas such as the environment, aquaculture and plant health. However, stakeholders from these sectors are involved in the Thailand's efforts to tackle AMR as well as in the development of the National Strategic Plan on AMR.

Recommendations for priority actions

- Develop a comprehensive national action plan on antimicrobial stewardship from a One Health approach that includes humans, livestock, aquaculture, companion animals, plants and the environment.
- Develop or strengthen surveillance systems to enhance data sharing on antimicrobial resistance in the human, animal, food and environmental sectors and on antimicrobial consumption and use in human and animals.
- Develop a national surveillance and response system for monitoring and reporting healthcare-associated and community-acquired Infections that also indicate infections caused by AMR pathogens.

Indicators and scores

P.3.1 Antimicrobial resistance detection– Score 4

Strengths/best practices

- Good laboratory capacity for AMR, which is strengthened through regular training and external quality assurance.
- Regular collection, analysis and dissemination of AMR data in the human health sector, as well as detection of emerging infections through a national network.
- National guidelines for standard microbiology laboratories that emphasize AMR identification are nearly completed.
- National Antimicrobial Resistance Center, Thailand (NARST) is a WHO Collaborating Center on AMR Surveillance and Training.
- Several public health laboratories are able to carry out whole genome sequencing and have active research activities.

Areas that need strengthening/challenges

- Increasing the capacity of hospital labs for detecting priority AMR pathogens and reporting the results in a timely manner.
- Expanding the coverage of microbiology laboratories with the capacity to perform mycobacterial cultures, identify drug-resistant tuberculosis and report to clinicians in a timely manner.
- To develop protocols for the harmonization of AMR surveillance between the human and animal sectors.

P.3.2 Surveillance of infections caused by antimicrobial-resistant pathogens– Score 3

Strengths/best practices

- Routine surveillance, prevention and response to AMR infections in selected hospitals.
- National AMR surveillance (for detecting, investigating and responding to AMR infections in a timely manner) through the implementation of the WHO Global Antimicrobial Resistance Surveillance System.
- Regular drug-resistance surveillance for tuberculosis at the national level.
- In the animal health sector, Thailand refers to World Organization for Animal Health standards for AMR surveillance and monitoring indicator bacteria. Testing is conducted in accordance with ISO 17025 and Clinical and Laboratory Standards Institute requirements.

Areas that need strengthening/challenges

- There are not enough hospital epidemiologists, infection control nurses and infectious disease pharmacists at the hospital level to effectively carry out surveillance of infections caused by antimicrobial-resistant pathogens.
- Limited capacity to conduct risk assessments on AMR
- Limited capacity to establish nationwide warning systems on AMR, hindering the development of an AMR surveillance and response network based on a One Health Approach.
- An insufficient number of qualified laboratory microbiologists including tuberculosis laboratory technicians, particularly outside Bangkok.

P.3.3 Healthcare-associated infection (HCAI) prevention and control programmes– Score 3

Strengths/best practices

- A National Master Plan on Healthcare-Associated Infection Prevention and Control (2017-2021) is nearing completion.
- The National Infection Control Committee enables the development of guidelines, provision of human resources, and implementation of policy and monitoring of healthcare-associated infections.
- Guidelines in Thai enable infection control nurses to perform surveillance and implement appropriate measures to reduce healthcare-associated infections and control multidrug-resistant organisms.
- Continuous efforts to improve infection prevention and control practices, policies, and training.
- Collaboration between academia and the Ministry of Public Health resulted in the establishment of the National Infection Control Committee.
- The national surveillance system for AMR, the National Infection Control Committee, universities and healthcare agencies work together to raise awareness of AMR among high-level administrators, Ministry of Health staff, other academics and the public.
- Thailand delivers training programmes and academic conferences on infection prevention and control.

Areas that need strengthening/challenges

- A national focal point for healthcare-associated infection prevention and control has not yet been established.
- Enhancing the quality of laboratory microbiology through regular improvements and quality assurance.
- Establishing national infection prevention and control data centres to support hospitals in submitting healthcare-associated infection and multidrug-resistant organism surveillance data for benchmarking, and in implementing up-to-date policies.

- Budget shortages for infection prevention and control activities in hospitals, as well as for research in the field.
- Uncertain career paths for infection control nurses, and few incentives for other professionals in the field.

P.3.4 Antimicrobial stewardship activities – Score 2

Strengths/best practices

- Promoting rational drug use in hospitals by demonstrating how the Antibiotic Smart Use Programme has led to a decrease in unnecessary prescriptions for respiratory infections, acute diarrhea and simple wounds.
- Regulatory strengthening to reclassify important antimicrobials as prescription drugs and withdraw antibiotics that have no clinical benefit, or are toxic, from the national drug registry.
- Prohibiting the registration and the use of antimicrobial agents as growth promoters.
- Farms that meet the criteria of Good Agriculture Practice have animal health management programmes under the supervision of farm veterinarians.
- An initiative to establish a Thai Antimicrobial Consumption Surveillance System. This uses national databases into which all pharmaceutical manufacturers and importers are required to report the volume of all medicines including antimicrobials that they have manufactured and imported on an annual basis to the Food and Drug Administration.
- Establishing good practices for the use of veterinary medicinal products in farms.

Areas that need strengthening/challenges

- Good quality antimicrobial stewardship programmes in hospitals are limited, due to inadequate resources and a lack of awareness among certain groups of physicians. Thus, there is the need to develop prescription auditing system as well as supporting facilities that enable physicians to adhere to the stewardship principles and guidelines.
- There is a need for veterinarians posted at the Food and Drug Administration as well as the Department of Fisheries to review veterinary medicines, including antimicrobials.
- Strengthening law enforcement and expediting the antibiotic reclassification process to enhance the effective control of distribution channels and sale of antibiotics for human and animal use.
- Strengthening multisectoral coordination and engagement with the environment, aquaculture and plant health sectors.
- Expand training programmes for infectious disease pharmacists to generate more experts in this field.

Zoonotic diseases

Introduction

Zoonotic diseases are communicable diseases that can spread between animals and humans. These diseases are caused by viruses, bacteria, parasites and fungi carried by animals, insects or inanimate vectors that aid in their transmission. Approximately 75% of recently emerging infectious diseases affecting humans is of animal origin; and approximately 60% of all human pathogens are zoonotic.

Target

Adopted measured behaviors, policies and/or practices that minimize the transmission of zoonotic diseases from animals into human populations.

Thailand level of capabilities

Thailand has several endemic and epidemic zoonotic diseases, and has developed strong capacity to address these diseases. The incursion of H5N1 highly pathogenic avian influenza in 2004 and the toll it took in terms of human lives and socio-economic impact on the poultry industry was a major stimulus for the country to develop a multisectoral and multi-disciplinary One Health approach to tackling zoonotic diseases. Collaboration between the human and animal health sectors for zoonoses prevention and control has since strengthened and Thailand has a national policy on zoonoses and emerging infectious diseases.

Key stakeholders involved in this multisectoral collaboration include the Departments of Disease Control, Medical Sciences, Livestock Development and National Parks, Wildlife and Plant Conservation, the Ministry of Interior, universities, the Thailand One Health University Network and local administrative organizations. These stakeholders work to embed a One Health approach and support zoonosis control and prevention programmes at the provincial, district and sub-district levels.

The five highest priority zoonotic diseases in Thailand, for which the country has surveillance systems in place, are rabies, avian influenza, brucellosis, anthrax, and nipah. The government has a rabies elimination programme, which is under the patronage of the king. Other priority diseases include leptospirosis, S. suis meningitis, trichinellosis, tuberculosis and Japanese encephalitis.

Recommendations for priority actions

- Develop an information sharing system and evaluate the timeliness of surveillance and response efforts for zoonoses (including epidemiological analysis), in order to develop a risk-based management approach.
- Strengthen community engagement in the surveillance, control and prevention of zoonoses, especially with regards to animal health and including events that may affect public health.
- Strengthen the engagement of academic institutes in disease diagnosis, survey, research and information sharing.
- Increase the number of staff who are trained to deal with zoonoses surveillance, control and prevention.
- Strengthen the mechanism for assessing the needs and required organizational structures and resources for effective surveillance and response to zoonoses.

Indicators and scores

P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens – Score 4

Strengths/best practices

- Thailand's National Strategic Plan for emerging infectious diseases, including zoonoses, has been adopted by the Thai Cabinet.
- There are surveillance systems for priority zoonoses, with information shared routinely through focal points and open access websites. This includes surveillance for Nipah viruses in bats.
- Situation Awareness Teams receive, verify and validate any public health threats, including zoonoses, on a daily basis. In the event of an outbreak of a zoonotic disease, Surveillance and Rapid Response Teams at the provincial and district levels, which always include a veterinary officer when dealing with a zoonotic disease, rapidly implement control measures according to guidelines defined for priority zoonoses.
- Veterinary and public health laboratories are able to detect most zoonotic diseases. There is a strong partnership between laboratories at academic institutes and other research institutes.
- Coordination processes for zoonoses are well-established, with regular meetings of committees, sub-committees and working groups at the national and sub-national levels.
- Veterinarians have been recruited at the wildlife authority to strengthen disease surveillance.

Areas that need strengthening/challenges

- More effective mechanisms for information sharing between sectors are required at the national and subnational levels for effective and efficient disease response. These mechanisms also need to facilitate information sharing between human health and animal health laboratories.
- Increased collaboration and commitment is required at the local level between various actors, including livestock volunteers, public health volunteers, the animal production industry and local authorities, to support:
    - improving the surveillance system;
    - joint outbreak investigations to better identify the causes of the emergence and spread of disease;
    - allocating adequate resources for disease control, including for rapid response, surveillance and collaboration among different sectors.
- Resources, including human resources, need to be easily and quickly mobilized during zoonotic outbreaks.

P.4.2 Veterinary or animal health workforce – Score 4

Strengths/best practices

- Additional veterinary staff have been recruited in recent years, especially in the wildlife sector. The human health sector has also recruited 12 veterinarians and six animal health scientists.
- Joint training on field epidemiology for the human and animal health sectors has been held for animal, wildlife and public health staff at all levels. There are separate FET programmes for veterinary and wildlife sectors.
- A veterinary public health course is provided for undergraduate students and graduate students at universities.
- The Thailand One Health University Network is an important partner in increasing staff skills and knowledge.

Areas that need strengthening/challenges

- A systematic assessment of workforce needs for surveillance and response should be used to ensure an adequate allocation of veterinarians at all levels and for all sectors.
- Newly recruited staff will require more financial resources and equipment.
- Encouraging knowledge and experience sharing across all sectors in order to improve capacities for the control of zoonotic diseases.

P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases established and functional – Score 4

Strengths/best practices

- Various National Strategic Plans, regular strategic and regular multi-sectoral technical meetings.
- A structure for enforcing laws related to zoonotic diseases.
- Joint investigations teams within Surveillance Rapid Response Teams.
- Several exercises have been conducted to verify that procedures are working and well implemented. These included table-top exercises at the ministerial level and practical exercises at the provincial level.

Areas that need strengthening/challenges

- More systematic information sharing among sectors for effective and timely disease response.
- Strengthening the livestock volunteer mechanism and increasing the participation of local government.
- Strengthening and encouraging joint outbreak investigation among relevant sectors in response to zoonoses and emerging infectious diseases.
- Better reallocation of resources during zoonotic outbreaks.
- Review endemic zoonoses strategies to increase efficiency and coherence between sectors, and to add clearer objectives for both the human and animal health sectors.

Food safety

Introduction

Food- and water-borne diarrhoeal diseases are leading causes of illness and death, particularly in less developed countries. The rapid globalization of food production and trade has increased the potential likelihood of international incidents involving contaminated food. The identification of the source of an outbreak and its containment is critical for control. Risk management capacity with regard to control throughout the food chain continuum must be developed. If epidemiological analysis identifies food as the source of an event, based on a risk assessment, suitable risk management options that ensure the prevention of human cases (or further cases) need to be put in place.

Target

Surveillance and response capacity among States Parties for food- and water-borne disease risks or events by strengthening effective communication and collaboration among the sectors responsible for food safety, and safe water and sanitation.

Thailand level of capabilities

Thailand puts a high priority on food safety and consumer protection. Food safety is important for the country, not only for public health protection but also for its reputation as a major food producers and a leading holiday destination for overseas visitors. In addition, as an exporter of various food products to global markets, Thailand complies with the high food safety standards that importing countries require.

Responsibility for food safety is shared between two main authorities: the Ministry of Agriculture and Cooperatives and the Ministry of Public Health. The former is in charge of food safety at farms producing for the domestic and export markets, and controlling the import of plants, animals, meat, tuna, shrimp, animal feed, agro-chemicals and agro-hazardous substances; the latter is responsible for the safety and quality of home-grown and imported food for sale in Thailand, labelling, advertising and packaging, and inspection and monitoring at borders and in the domestic market.

The food safety control system is based on five key elements:

- Food law and regulations;
- Food control management;
- Inspection services;
- A network of public and private accredited laboratories for food quality monitoring and for investigations into outbreaks of food poisoning or foodborne diseases; and
- Information, education and training targeting food business operators, regarding regulations and good manufacturing practices, consumers, food safety professionals (nationally through the Thailand Rapid Alert System for Food and Feed internationally through INFOSAN).

Recommendations for priority actions

- Strengthen data collection and the reporting system under the INFOSAN network, particularly between central and local authorities (provincial public health offices), for improved risk analysis.

- Develop an action plan for capacity building on foodborne outbreak investigations for relevant officers. This action plan is also to be included in the Association of Southeast Asian Nations (ASEAN) five-year work plan under the ASEAN Health Development agenda to strengthen the food control system covering foodborne outbreak investigation training for competent agencies working on food safety area in the ASEAN Economic Community.
- Develop a quality system for food safety in local authorities (Provincial Public Health Offices) to strengthen the administrative management of food safety at the provincial level, in order to be in line with the WHO/FAO manual for quality systems based on IHR and Codex Committee on Food Import and Export Inspection and Certification Systems guidelines.

Indicators and scores

P.5.1 Mechanisms for multisectoral collaboration established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases – Score 3

Strengths/best practices

- The five key elements of national food safety control system are implemented throughout the country, using a food-chain approach for consumer protection and trade facilitation.
- Regulations and standards are developed and implemented in collaboration with relevant stakeholders such as food business operators, academic institutes, nongovernmental organizations and relevant competent agencies in the food chain.
- All drafts of regulations are submitted to World Trade Organization members for their comments at least 60 days before endorsement.
- Active Surveillance and Rapid Response Teams for investigating foodborne outbreaks are deployed with clear standard operating procedures and a reporting system that enables effective operations both by central and local teams.
- Examples of best practices include the way in which Thailand managed melamine contamination in milk from China and the investigation into Shigellosis in baby corn exported from Thailand.

Areas that need strengthening/challenges

- Data collection and reporting systems require strengthening and information should be better shared among relevant agencies, both at the central and local level, for an enhanced risk analysis and more effective prevention and control.
- Capacity building for relevant officers on foodborne investigations is required to increase the understanding of food safety control in the supply chain as well as to improve traceability, including for emerging hazards.
- Complex food chains demand greater capacity and multisectoral involvement in foodborne outbreak investigations. This includes capacity building on epidemiological analysis and risk analysis in order to develop a more risk-based approach to the food control system.
- Closer cooperation among designated authorities is required for continuous improvement. This will be necessary for the development of an efficient national food safety monitoring plan, and appropriate intervention measures in case of identified gaps.

Biosafety and biosecurity

Introduction

It is vital to work with pathogens in the laboratory to ensure that the global community possesses a robust set of tools – such as drugs, diagnostics, and vaccines – to counter the ever-evolving threat of infectious diseases.

Research with infectious agents is critical for the development and availability of public health and medical tools that are needed to detect, diagnose, recognize and respond to outbreaks of infectious diseases of both natural and deliberate origin. At the same time, the expansion of infrastructure and resources dedicated to work with infectious agents have raised concerns regarding the need to ensure proper biosafety and biosecurity to protect researchers and the community. Biosecurity is important in order to secure infectious agents against those who would deliberately misuse them to harm people, animals, plants or the environment.

Target

A whole-of-government national biosafety and biosecurity system with especially dangerous pathogens identified, held, secured and monitored in a minimal number of facilities according to best practices; biological risk management training and educational outreach conducted to promote a shared culture of responsibility, reduce dual-use risks, mitigate biological proliferation and deliberate use threats, and ensure safe transfer of biological agents; and country-specific biosafety and biosecurity legislation, laboratory licensing and pathogen control measures in place as appropriate.

Thailand level of capabilities

Thailand considers biosafety and biosecurity to be an issue of national importance and has developed several acts in response to evolving needs. These are the Pathogen and Animal Toxin Act (last updated in 2015), the Public Health Act (2015) and the Occupational Safety, Health and Environment Act (2011). Several ministries' bylaws that will strengthen biosafety and biosecurity are expected to be added to the Pathogen and Animal Toxin Act in 2018.

Pathogens and toxins are categorized by the risks that they present to human or animal health, using international standards. Different procedures are in place for different risk categories. Laboratories can handle biosafety level one pathogens or toxins, without prior notification or permission from the Ministry of Public Health. However, handling biosafety level two pathogens or toxins requires notification to the Director General of the Department of Medical Sciences. For biosafety level three, laboratories must receive an approved license from the Director General. Biosafety level four pathogens or toxins cannot be handled in Thailand, as the country does not have a suitable laboratory facility.

Laboratories are required to report to the Department of Medical Sciences at the Ministry of Public Health on biosafety level two and three pathogens and toxins every three months. Licenses for handling certain biosafety level pathogens and toxins must be renewed annually.

The National Institute of Health has an up-to-date inventory of pathogens in laboratory repositories, which is monitored by the Department of Medical Sciences. The National Institute of Animal Health has an electronic logbook with an inventory of animal health pathogens in laboratory repositories. There is regular collaboration and communication between human and animal health reference laboratories on a regular basis.

The Department of Medical Sciences conducts continuous training for human health reference laboratory staff and regional public health laboratories. In outbreak situations, regional public health biosafety officers provide emergency training at provincial hospital laboratories.

The National Institute of Animal Health provides laboratory biosafety and biosecurity training courses, including the animal health reference laboratory staff and regional animal health laboratory staff, once a year.

The Department of Medical Sciences has developed a Biorisk Management Toolkit for training laboratory personnel in hospitals and academic institutes throughout the country.

The Biosafety & Biosecurity Network of Thailand has been active since 2009 under the Virology Association of Thailand and in partnership with the Asia Pacific Biosafety Association.

Biosafety and biosecurity are considered as part of various auditing licensing, certification and accreditation processes for laboratories. These include yearly audits of human health laboratories by the Ministry of Public Health and ISO 9001 certification for both human and animal health laboratories.

There is a wide range of stakeholders involved in biosafety and biosecurity. These include, in the human health sector, Regional Medical Sciences Centres and the Bureau of Epidemiology and, in the animal health sector, Regional Veterinary Research and Development Centres and the Bureau of Disease Control and Veterinary Services.

Recommendations for priority actions

- Ensure the detection and follow up of incidents by biosafety officers. Serious potential or occurred incidents should be investigated and lessons learnt.
- Develop and strengthen national training on biosafety and biosecurity using a unified public and animal health manual with equal outreach in the public and animal health sectors.
- Enhance existing networks between ministries, such as the emerging infectious disease laboratory network by including responsible biosafety officers from the public health and animal health sectors and from other related ministries.

Indicators and scores

P.6.1 Whole-of-government biosafety and biosecurity system in place for human, animal and agriculture facilities – Score 4

Strengths/best practices

- Implementation of the Pathogen and Animal Toxin Act (first published in 1982 and updated in 2015) and legislation on human and animal health laboratories throughout the country.
- The designation of a responsible agency: The Department of Medical Sciences, Ministry of Public Health.
- Monitoring of the inventory of the country's pathogen repository.
- Human health laboratories report to the Director General of the Department of Medical Sciences every three months and are required to renew their licences for handling certain pathogens and toxins every year.
- Links between the Department of Medical Sciences and the Department of Customs to minimize biorisks in imports and exports.
- The regulation of imports and exports through an electronic permit system.

Areas that need strengthening/challenges

- Harmonize the national biosafety and biosecurity curriculum with the new Biorisk Management Toolkit, including the animal health sector and biosafety requirements for licensing.
- Implement biosafety and biosecurity standards at the farm level, through updates to Good Agricultural Practice requirements.
- Scale up training on national biosafety and biosecurity to reach full coverage.
- Implement, enforce and advocate for the Pathogen and Animal Toxin Act, including the 2015 revisions and auxiliary acts expected in 2018.

P.6.2 Biosafety and biosecurity training and practices – Score 4

Strengths/best practices

- Developing, consulting on and implementing a Biorisk Management Toolkit.
- Train the trainer activities led to an 80% increase in scores in biorisk management efficiency assessments.
- Biorisk management training has reached 96.5% of the Ministry of Public Health's laboratory staff (compared to 45% in 2015).
- Laboratories report on incidents or spills once a year to the Ministry of Public Health.
- Thailand collaborated with the WHO South East Asia Regional Office to organize a regional training workshop on biorisk management in 2016; and the Biorisk Management Toolkit will be used in neighbouring countries following a request from Lao People's Democratic Republic.

Areas that need strengthening/challenges

- Reaching all hospitals with biorisk management training and monitoring training in hospitals.
- Training new and replacement certified biorisk management trainers.
- Increase biosafety at the farm level through an update of the Good Agricultural Practices requirements, and at all other facilities handling animals.
- Expand biorisk management training to cover 100% of government laboratories.
- A lack of biorisk management train-the-trainer activities in the animal health sector
- Foster a culture of reporting incidents and follow up and learn from incidents or near misses; serious incidents should be reported to the Ministry of Public Health.

Immunization

Introduction

Immunizations are estimated to prevent more than two million deaths a year globally. Immunization is one of the most successful global health interventions and cost-effective ways to save lives and prevent disease.

Target

A national vaccine delivery system – with nationwide reach, effective distributions, access for marginalized populations, adequate cold chain and ongoing quality control – that is able to respond to new disease threats.

Thailand level of capabilities

Immunization has been practiced in Thailand for more than 40 years and began with vaccination against small pox, cholera, and typhoid fever. The National Expanded Programme on Immunization was initiated in 1977, providing vaccinations against tuberculosis, diphtheria-tetanus-pertusis and polio. The national programme now provides a total of 10 vaccines under the country's universal health coverage scheme. Vaccine coverage is high, at 90% across the country. Human papilloma virus vaccination will be introduced to the national programme later in 2017.

Thailand conducts a vaccine coverage survey every 5 years at the national level, with health staff at the district and sub-district levels assessing completion rates among the target population. The latest survey, in 2013, showed that 98.7% of the target population had received the first dose of the measles, mumps and rubella vaccine and 95.3% had received the second dose.

Between 4,000 and 7,000 measles cases are reported through the disease surveillance system each year. A Measles Elimination Database has been developed to collect information on all suspected cases reported and confirmed by laboratories.

Hospitals store sufficient vaccines for two months of supply; the national store has vaccines for six months of supply. The Government Pharmaceutical Organization delivers the national immunization programme across Thailand, under the authority of the National Health Security Office. Evaluations are conducted every one to two years in all regions to assess whether the necessary logistics and cold chains are in place for continuous vaccine delivery.

Recommendations for priority actions

- Improve the vaccine coverage monitoring system, involving both public and private sectors, to complement the vaccine coverage survey that is conducted every five years.
- Increase immunization coverage for hard-to-reach populations (including those in remote areas, the three southernmost provinces where there are insurgencies, and some religious, ethnic and migrant groups) and in areas with lower coverage.

Indicators and scores

P.7.1 Vaccine coverage (measles) as part of national programme – Score 5

Strengths/best practices

- Thailand has a national immunization programme that is aligned with the WHO Global Vaccine Action Plan.
- There are high levels of coverage for the measles, mumps and rubella vaccine. Coverage for the first and second doses of the measles-containing vaccine averaged 99% nationwide in 2016 estimates.
- In 2014, Thailand reduced the age of the target population for the second dose of the measles, mumps and rubella vaccine from seven years to two and a half years.
- A nationwide vaccination campaign was conducted in 2015 for children aged between two and a half and seven who had not yet received the second dose of the measles, mumps and rubella vaccine.

Areas that need strengthening/challenges

- Despite high overall coverage levels, measles outbreaks have been reported periodically due to lower levels of vaccine coverage in young children in some areas.
- Sporadic outbreaks have occurred among teenagers and young adults in educational institutes and workplaces, due to missed vaccination opportunities during their childhood.
- Improved management of data regarding vaccine coverage.
- Routine vaccination can be hindered in remote areas, some areas in the southernmost provinces and among some religious, ethnic and migrant groups.
- In the absence of a monitoring system, vaccine coverage cannot be assessed between five-yearly national surveys.
- Unlike public-sector hospitals, private-sector hospitals do not report data on vaccinations.

P.7.2 National vaccine access and delivery – Score 5

Strengths/best practices

- Sufficient vaccine storage at hospitals and at the national level.
- A vendor-managed inventory system is used to distribute vaccines to healthcare providers throughout the country.
- Evaluation surveys, performed every one to two years, assess logistics and cold chain capacity in all regions.

Areas that need strengthening/challenges

- Increasing immunization in specific areas with low populations and lower levels of vaccine coverage, compared to national average.
- Developing specific strategies to increase accessibility and coverage among hard-to-reach populations.
- High levels of population movement in urban areas, border provinces and the special economic zone.
- Insurgencies in the three southernmost provinces

DETECT

National laboratory system

Introduction

Public health laboratories provide essential services including disease and outbreak detection, emergency response, environmental monitoring and disease surveillance. State and local public health laboratories can serve as a focal point for a national system, through their core functions for human, veterinary and food safety including disease prevention, control and surveillance; integrated data management; reference and specialized testing; laboratory oversight; emergency response; public health research; training and education; and partnerships and communication.

Target

Real-time biosurveillance with a national laboratory system and effective modern point-of-care and laboratory-based diagnostics.

Thailand level of capabilities

Thailand's human health laboratory system consists of private diagnostic laboratories, public health laboratories, regional public health laboratories and one public health reference laboratory. The Department of Medical Sciences is mandated, by royal decree, as the national reference laboratory for diseases and consumer protection. The National Institute of Health is the national reference laboratory for infectious diseases. Sub-national laboratories are located in 14 regional medical sciences centres across the country. These laboratories have the capacity to perform the most common microbiological diagnostic tests, as well as to refer specimens to the National Institute of Health if required.

The human health laboratory network is based on hospital networks (including Ministry of Public Health, other government, private and university hospitals). At the local level, the network of diagnostic laboratories is based on secondary and tertiary care hospitals and private laboratories. The tests performed by each laboratory are adapted to local needs. Access to laboratory services is covered by one of the three health insurance systems available in the country.

There are nine veterinary diagnostic labs and an animal health reference laboratory in Bangkok and seven laboratories in regional research and development centres. In addition, Thailand hosts the World Organization for Animal Health Regional Reference Laboratory for Foot and Mouth Disease in Southeast Asia and the Veterinary Biologics Assay and Research Center, which are part of the National Institute for Animal Health network.

Thailand's laboratory network has developed good diagnostic capacities for most emerging pathogens in both the human and animal health laboratories, and is able to perform more than the 10 core tests identified by the IHR.

Specimens can be shipped to the National Institute for Health within 24 hours from more than 80% of the country, and within 48 hours from every district under normal circumstances. If there are outbreaks in remote areas or in emergency situations, the military can assist with transportation.

Thailand has developed quality systems for its laboratories, which are accredited according to international standards. All national human and animal health laboratories are certified according to ISO 9001 and ISO 17025 standards. Human health laboratories are also certified to ISO 15189 and ISO 17043 standards.

Other specialized laboratory services, such as the investigation of unknown toxins and pesticide residues in goods can be provided by the National Institute of Heath, but in a separate laboratory to the main human health laboratory.

The human and animal health laboratory system is also part of a strong international network. Several national reference laboratories are also WHO regional reference laboratories (for polio, influenza, measles and rubella), and WHO Collaborating Centres (for Antimicrobial Resistance Surveillance and Training, Strengthening Quality System in Health Laboratory), and World Organization for Animal Health regional references laboratories for foot and mouth disease and brucellosis.

The human health reference laboratory has three biosafety level three facilities, and 26 laboratories around the country have dedicated receiving areas with the capacity to receive and refer pathogens that are highly contagious or of public concern, such as Ebola or MERS-CoV to national laboratories. Samples are inactivated in a biosafety cabinet and analyses are molecular. Matrix-assisted laser desorption/ionization is widely used in the human health reference laboratory and there is access to next generation sequencing for completely unknown pathogens.

Recommendations for priority actions

- Enhance data linkage systems between laboratories and the epidemiology sector to support surveillance, risk analysis, and early warning systems.
- Implement laboratory licensing processes and frameworks at relevant public health and animal health laboratories.
- Enhance collaborative efforts on laboratories among relevant agencies and between the human health and animal health sectors according to the One Health approach.
- Leverage direct networking and collaboration with national reference laboratories that have advanced capacity, and support a network of other regional and international laboratories or relevant institutes.

Indicators and scores

D.1.1 Laboratory testing for detection of priority diseases – Score 4

Strengths/best practices

- Thailand has a health service plan with clearly defined referral network for animal health and human health, with a very wide range of detection capacities for diagnosis and confirmation of infectious diseases.
- In 2015, the Regional Influenza Reference Laboratory was able to identify a new virus strain, which was used as vaccine strain
- MERS-CoV can be detected and confirmed by genetic sequencing in-country within 24 hours.
- The existing laboratory network covers all the main needs of the country in terms of diseases, toxins, pesticides and pollutants, in a One Health Approach. The national laboratory system can detect more than the 10 priority diseases in the IHR.
- A dedicated budget is available to immediately perform tests or interventions in the case of suspected outbreaks.

Areas that need strengthening/challenges

- The information system that manages information from laboratories should be improved to better use the information generated by laboratories.
    - The Laboratory Information Management System should be able to communicate with the Health Information System to connect patient data.
    - Information from laboratories should be connected electronically with other epidemiological information to enable better epidemiologic analysis.
- There is not a standard laboratory data format between systems. A common language is needed between all actors.
- Some laboratories do not report test results in a timely manner.

D.1.2 Specimen referral and transport system – Score 4

Strengths/best practices

- Specimens can be transported to the reference laboratory in less than 24 hours from more than 80% of the country, and in 48 hours from all parts of the country. If needed, mobile laboratories are available for both human health and animal health. In exceptional cases, the army can be asked to transport samples from hard to reach locations.
- The network of human and animal health is well-prepared for sample referral and in-country specimen referral is routine practice at all levels.
- National laboratories can refer specimens to the international laboratory network. Reference laboratories routinely ship specimens to international laboratories for confirmation.

Areas that need strengthening/challenges

- The implementation of the Pathogen and Animal Toxin Act (2015) needs to be completed.
- New auxiliary acts and national guidelines, which should strengthen measures for the production, storage and transportation of infectious substances, are expected in 2018.
- Increased capacity for enforcement and monitoring and evaluation.

D.1.3 Effective modern point-of-care and laboratory-based diagnostics – Score 4

Strengths/best practices

- The current laboratory network is able to provide good quality and timely testing services.
- Modern technologies are available such as multiplex serology, polymerase chain reaction, next generation sequencing and Matrix-assisted laser desorption/ionization.
- Point of care testing is used where appropriate.
- Rapid tests for diseases such as leptospirosis and malaria are available at the local level.
- Thailand has mobile animal health and human health laboratories.

Areas that need strengthening/challenges

- Maintaining and improving the level of service by implementing new point of care tests, and more accurate tests (such as the Xpert MTB/RIF test for tuberculosis), and by strengthening the capacity to detect and identify known and new pathogens.
- The validation and quality control process for tests requires strengthening. Evaluations for efficiency and effectiveness are only performed for selected tests (such as for HIV). Other test kits are evaluated by the end-user, leading to variable results.

- Increasing the capacity to perform cost-benefit analysis on new, high-costs diagnostic tests.

D.1.4 Laboratory quality system – Score 3

Strengths/best practices

- Quality management is well developed in most laboratories.
  - More than >99 % of clinical laboratories are certified according to relevant quality standards.
  - National and sub-national laboratories are accredited according to relevant international standards (ISO15189, 17025, 17043 and 9001).
  - National and sub-national animal health laboratories are accredited according to ISO 17025 and 9001 standards.
- The national accreditation body, the Bureau of Laboratory Quality Standards, which is in charge of laboratory accreditation, is a member of the International Laboratory Accreditation Cooperation. The Ministry of Public Health performs an audit of laboratories once a year.
- Private-sector laboratories are required to report on notifiable diseases in the same way as public-sector laboratories.
- The Ministry of Public Health has developed quality standards customized for the Thai health system and used for quality testing within the country.

Areas that need strengthening/challenges

- Licensing requires strengthening and standardizing. Current licensing mechanisms do not cover all human health laboratories. Requirements and licensing for private laboratories are defined separately by the Sanitarium Act.
- A common policy and unified framework for licensing is needed that will ensure conformity with national standards and promote quality testing and continuous improvement. Strong coordination with the multiple stakeholders in this sector will be needed.

Real-time surveillance

Introduction

The purpose of real-time surveillance is to advance the safety, security and resilience of the nation by leading an integrated biosurveillance effort that facilitates early warning and situational awareness of biological events.

Target

Strengthened foundational indicator- and event-based surveillance systems that are able to detect events of significance for public health, animal health and health security; improved communication and collaboration across sectors and between sub-national, national and international levels of authority regarding surveillance of events of public health significance; improved country and intermediate level regional capacity to analyse and link data from and between strengthened, real-time surveillance systems, including interoperable, interconnected electronic reporting systems. This would include epidemiologic, clinical, laboratory, environmental testing, product safety and quality and bioinformatics data; and advancement in fulfilling the core capacity requirements for surveillance in accordance with the IHR and OIE standards.

Thailand level of capabilities

Thailand's Ministry of Public Health established a disease surveillance programme in 1970. The country now has a multisectoral legislative framework through the Communicable Disease Act (2015) and 67 diseases are on a periodically revised list of notifiable diseases.

Thailand's surveillance system is fully electronic and the country has demonstrated capabilities in gathering and aggregating indicator-based surveillance data from all levels of the health system, including a weekly feedback mechanism. However, there remain difficulties in connecting the private health sector to this surveillance system.

Event-based surveillance functions at all levels of the health care systems in the country through adequately trained Situation Awareness Teams. These capacities are linked to multidisciplinary Surveillance and Rapid Response Teams that are accessible at all times. The animal health and human health surveillance systems coordinate at the provincial, district and sub-district levels.

Syndromic surveillance for epidemic-prone clinical entities (such as encephalitis and respiratory tract infections) is in place at the national level through sentinel laboratories, special surveillance programmes or active surveillance programmes.

To achieve the highest scores in this technical area, Thailand should take steps to enhance the integration of surveillance databases among different sectors, develop training for subject matter experts, regularly conduct evaluations of the surveillance system and further develop regional and international cooperation.

Recommendations for priority actions

- Enhance the integration of the surveillance database system through meetings between stakeholders from government health (including animal health), non-health sectors and the private sector.
- Develop a programme of trainings and workshops for subject matter experts to provide them with a good understanding of the surveillance system.

- Regularly conduct evaluations of the surveillance system at all levels of the health care system, among both public and private sectors and including zoonotic surveillance in a One Health approach.

Indicators and scores

D.2.1 Indicator- and event-based surveillance systems – Score 4

Strengths/best practices

- Indicator-based surveillance covers all public healthcare facilities and some private hospitals. An electronic system allows hospitals to send patient-related information regarding diseases under surveillance.
- There is event-based surveillance at all levels of the healthcare system. Information received is verified, recorded and reported to the relevant authorities by dedicated Situation Awareness Teams.
- Unusual human health situations can be reported through a hotline number (1422).
- Provinces sharing borders with Lao People's Democratic Republic have cross-border programmes.

Areas that need strengthening/challenges

- Indicator-based surveillance data is validated either through the electronic system or by a subject matter expert. A lack of understanding of fundamental or applied epidemiology by subject matter experts could impair their analysis.
- Evaluation of the quality and performance of the surveillance process requires strengthening and prioritization by local decision makers.
- Raising awareness among clinicians on the importance of participating in the surveillance system.

D.2.2 Interoperable, interconnected, electronic real-time reporting system – Score 4

Strengths/best practices

- Thailand's surveillance system is electronic and covers all government health services. The Bureau of Epidemiology publishes data and updated weekly and annual surveillance reports on its open-access website.
- The Communicable Diseases Act provides a comprehensive and secure legal framework to secure public health surveillance activities.
- The Hospital Information System is linked to other strategic information systems.

Areas that need strengthening/challenges

- Compliance with the Communicable Disease Act could be enhanced by adding surveillance reporting units at private hospitals and clinics.
- Promotion and education related to surveillance requires strengthening among multiple stakeholder groups.
- Information sharing between the human and animal health surveillance systems mainly relies on interpersonal relationships, not formal protocols.

D.2.3 Integration and analysis of surveillance data – Score 4

Strengths/best practices

- Epidemiological and laboratory data are reported online and in real-time, including for emerging infectious diseases and epidemic-prone respiratory diseases.

- Surveillance and laboratory data are integrated and shared between the Ministry of Health and Ministry of Agriculture for only some diseases (rabies and avian influenza, for example).
- Online surveillance programmes for Middle East Respiratory Syndrome and severe acute respiratory infections provide automatic links between epidemiological officers and laboratory officers.
- Surveillance reports are published weekly and annually for the main diseases of interest in order to provide information for policy-makers.
- Regular analytical reports are produced and disseminated to various levels of the human health system.

Areas that need strengthening/challenges

- Automatic links between epidemiological surveillance data and laboratory data need to be implemented for all notifiable data, building on pilot systems.
- Barriers to data sharing should be overcome by building inter-organizational trust, increasing and securing communication channels among stakeholders, policy development and political commitment in the government and nongovernment sectors and standardizing data.

D.2.4 Syndromic surveillance systems – Score 4

Strengths/best practices

- Sentinel laboratory surveillance for priority syndromes including encephalitis and respiratory tract infections has been conducted in forty hospitals from 27 provinces.
- Special surveillance for priority diseases: acute flaccid paralysis, measles and severe acute respiratory infections.
- National passive surveillance and notifiable communicable disease surveillance to monitor acute diarrhoea, food poisoning, hand foot and mouth disease and fevers of unknown origin.

Areas that need strengthening/challenges

- Syndromic surveillance is relatively new in Thailand and could be putting an additional burden on local reporting units.
- Combined notification through the indicator-based and syndromic surveillance systems, through the R506 programme, is currently being pilot-tested and needs to be fully implemented.

Reporting

Introduction

Health threats at the human–animal–ecosystem interface have increased over the past decades, as pathogens continue to evolve and adapt to new hosts and environments, imposing a burden on human and animal health systems. Collaborative multidisciplinary reporting on the health of humans, animals and ecosystems reduces the risk of diseases at the interfaces between them.

Target

Timely and accurate disease reporting according to WHO requirements and consistent coordination with FAO and OIE.

Thailand level of capabilities

Three officials, the Deputy Director General of the Department for Disease Control, a Senior Advisor at the Department for Disease Control and the Acting Director of the Bureau of Epidemiology, are IHR contact points on behalf of the Director General of the Department for Disease Control.

Thailand has additional contact points for reporting to the World Organisation on Animal Health on diseases in terrestrial, aquatic and wild animals.

In the human health sector, food safety events are reported through both the National IHR Focal Point and the INFOSAN focal point. In the animal health sector, food safety events are not reported to the World Organisation for Animal Health.

There is regular information exchange regarding zoonotic events between the Ministry of Public Health's Situation Awareness Teams and the Department of Livestock Development's Event Information Teams. If there is a zoonotic event of significance to public health, a suspected avian influenza outbreak for example, there will be direct telephone communication between the human and animal health authorities.

There is no formal standard operating procedure in place for approving and reporting on a potential public health event of international concern to WHO. However, there are common practices for reporting. Following the verification of clinical and laboratory signals, information is sent to a technical committee, which in turn reports to the Director General of the Department of Disease Control and the Permanent Secretary of the Ministry of Heath. The IHR contact points report to WHO via the Country Office. If reporting could have a severe socio-economic impact, the Ministry of Health will consult with higher-level authorities.

In case of zoonotic diseases, there may be a formal meeting between human health and animal health teams to discuss and make a decision on reporting. The Chief Veterinary Officer (also the Director General of Department of Livestock Development) has authority on reporting of zoonotic diseases.

Thailand is actively involved in regional networks for information exchange and has bilateral agreements with neighbouring countries for reporting.

The country uses informal consultation mechanisms with WHO, both to report on in-country events and to receive information from other countries. Thailand also uses bilateral exchange mechanisms with other National IHR Focal Points.

Overall, Thailand has strong surveillance and reporting mechanisms. However obtaining approvals at the highest level can take time, depending on the sensitivity and socioeconomic impact of an event.

Recommendations for priority actions

- Formalize clear protocols for reporting potential public health emergencies of international concern to WHO and the World Organisation for Animal Health.
- Ensure capacity building for the National IHR Focal Point.
- Review and reform the organizational structure for reporting and communication of the IHR coordinating office.

Indicators and scores

D.3.1 System for efficient reporting to FAO, OIE and WHO – Score 3

Strengths/best practices

- The National IHR Contact Points in the Department for Disease Control and the coordinating office at the Bureau of Epidemiology have easy access to surveillance and outbreak information and direct links to response teams.
- The Bureau of Epidemiology has strong links with its animal health counterpart, the Department for Livestock Development. Information exchange between the two sectors already takes place.
- The WHO Country Office participates in meetings regarding important public health events.
- An expert advisory committee exists and is regularly consulted.
- Additional consultations and conferences are held with International experts, Health Ministers and ASEAN countries.

Areas that need strengthening/challenges

- Developing standard operating procedures for approvals and reporting to WHO on potential public heath emergencies of international concern.
- Maintaining the capabilities of the National IHR Focal Point, for example when new team members are appointed.
- Improving the organizational structure of the IHR coordinating office and increased cross-sectoral coordination for efficient and timely reporting.

D.3.2 Reporting network and protocols in country – Score 3

Strengths/best practices

- Real time surveillance, particularly event-based surveillance.
- Situation Awareness Teams.
- Active member of the ASEAN Plus Three Field Epidemiology Training Network and Mekong Basin Disease Surveillance network.
- Memoranda of Understanding with neighboring countries for information sharing.

Areas that need strengthening/challenges

- Timely reporting of potential public health emergencies of international concern to WHO
- Reporting potential public health emergencies of international concern can be sensitive and requires careful discussion and consideration.

Workforce development

Introduction

Workforce development is important in order to develop a sustainable public health system over time by developing and maintaining a highly qualified public health workforce with appropriate technical training, scientific skills and subject-matter expertise.

Target

States Parties with skilled and competent health personnel for sustainable and functional public health surveillance and response at all levels of the health system and the effective implementation of the IHR (2005).

Thailand level of capabilities

Thailand has demonstrated levels of capacity in its public health workforce in support of detection and response under the IHR. There is a multidisciplinary workforce at each administrative level of the public health system. A well-developed network of Surveillance and Rapid Response Teams contributes to rapid detection and response capabilities, which is further enhanced by connections with village health volunteers at the local level throughout the country. There is collaboration between multiple stakeholders, including universities, non-health ministries, sub-national public health units and international organizations.

Three levels of field epidemiology training are tailored to ensure field epidemiology capacity at all levels of the public health system. This includes a sustainable two-year field epidemiology training programme that includes an international component – training participants from other countries in the region.

The capacity of the public health workforce could be strengthened by more explicit inclusion of public health workforce targets in the Health Workforce Strategy, which is currently being revised. A specific gap that should be addressed is that field epidemiologists are not recognized in the current strategy. Other ministries that contribute to the public health workforce should also develop targets for relevant disciplines and support training programmes to develop those staff. Additionally, strategies to improve the retention of physician epidemiologists and other public health staff need to be developed to address the relatively high turnover.

Recommendations for priority actions

- The Health Workforce Strategic Plan under development by the MoPH should address needs for the public health workforce, including specifying a target for the number of field epidemiologists (at least one per district) and multi-disciplinary needs (informatics and social sciences, for example), to ensure robust surveillance and response capacity under the IHR, while other ministries should develop targets for the public health workforce in sectors under their purview.
- Develop strategies (career path options and incentives) to improve the retention of public health staff, especially field epidemiologists and trainers, in order to strengthen the public health workforce necessary for surveillance and response at all levels of public health system.
- Strengthen collaboration across relevant sectors and with international partners to enhance national and regional public health workforce capacity and health security.

Indicators and scores

D.4.1 Human resources available to implement IHR core capacity requirements – Score 4

Strengths/best practices

- Thailand maintains a multi-disciplinary public health workforce at all levels of the public health system, including field epidemiologists, veterinary officers, data analysts, public health officers, sanitarians, and environmental health officers.
- Surveillance and Rapid Response Teams are in place at all administrative levels and form the backbone of rapid investigations and responses to potential public health threats. There are nearly 1000 of these teams at district level and nearly 10 000 at the sub-district level.
- To strengthen collaboration between the human and animal health sectors, the field epidemiology training programme enrols two veterinary officers from the Department of Livestock Development each year.
- The Department of Livestock Development implements a modular field epidemiology training programme for veterinarians, enrolling primarily veterinary officers from the provincial level.
- Thailand has trained 577 public health officials in the three different levels of field epidemiology.
- A very large network of village health volunteers play an important role in early detection by reporting events and rumours and connecting with local Surveillance and Rapid Response Teams.

Areas that need strengthening/challenges

- Geographic coverage of trained field epidemiologists is sub-optimal with many provinces well below Thailand's target of having more than 90% of districts with at least one field epidemiologist.
- Although the overall number of trained field epidemiologists is more than the JEE target of 1:200,000 population (currently 1:120,000), many of them are graduates of the 8-month programme as opposed to the more in-depth 2-year programme; further, many provinces remain with a low percentage of districts having a trained field epidemiologist.

D.4.2 FETP or other applied epidemiology training programme in place – Score 5

Strengths/best practices

- Thailand supports three different levels of field epidemiology training (8 months, 1 year, and 2 years), each targeting a different level of the public health system (national, provincial/regional, and district).
- Basic training (3-5 day) is also conducted for local Surveillance and Rapid Response Teams.
- A strong 2-year field epidemiology training programme that benefits from more than 35 years of experience and is fully supported by the government. Thailand's field epidemiology training programme employs a 'learning by doing' philosophy.
- The Bureau of Epidemiology in the Ministry of Public Health, is a WHO Collaborating Centre for Field Epidemiology. The Thai FETP, which is certified by the Thai Medical Council, also supports regional capacity building by training staff from other countries through their International field epidemiology training programmes.
- Field epidemiology training programmes have trained over 200 Thai and 50 international alumni.

Areas that need strengthening/challenges

- The retention of physician epidemiologists in public health is sub-optimal with a substantial proportion of field epidemiology training programme graduates returning to clinical medicine.

- The career path for field epidemiologists is not well defined within the public health system especially at the provincial level.
- The mentoring and supervisory skills of field epidemiology trainers needs to be improved and the number of trainers overall needs to be increased.
- Public health workforce development programmes in other ministries are often not adequately funded, limiting intersectoral collaboration.

D.4.3 Workforce strategy – Score 3

Strengths/best practices

- A 10-year Health Workforce Strategic Plan (2007-16) was developed and is currently being updated for the next 20 years.
- The Department of Disease Control has a strategy to align field epidemiology training activities with competencies needed at different levels of the health system.
- Strategies exist to incentivize Surveillance and Rapid Response Teams, support training, and develop skills in investigation and reporting.

Areas that need strengthening/challenges

- The Health Workforce Strategic Plan does not fully address public health workforce needs and does not include field epidemiologists or social scientists.
- Other sectors that comprise important parts of the public health workforce do not have plans to define public health workforce targets and often do not have adequate budget to support training programmes.
- There is not a well-defined career path for field epidemiologists at the hospital and provincial level.

RESPOND

Preparedness

Introduction

Preparedness includes the development and maintenance of national, intermediate and community/primary response level public health emergency response plans for relevant biological, chemical, radiological and nuclear hazards. Other components of preparedness include mapping of potential hazards, the identification and maintenances of available resources, including national stockpiles and the capacity to support operations at the intermediate and community/primary response levels during a public health emergency.

Target

Development and maintenance of national, intermediate (district) and local/primary level public health emergency response plans for relevant biological, chemical, radiological and nuclear hazards. This covers mapping of potential hazards, identification and maintenance of available resources, including national stockpiles and the capacity to support operations at the intermediate and local/primary levels during a public health emergency.

Thailand level of capabilities

Thailand's Department of Disaster Prevention and Mitigation, under the Ministry of Interior, has a National Disaster Risk Management Plan that is the country's principal emergency preparedness and response plan for various hazards, including health-related hazards.

The Bureau of Health Emergency Response is developing a National Strategic Plan in Medical & Public Health Emergency Management (2017-2020). This is expected to be a multihazard plan that covers the work of each department in responding to key hazards.

The Bureau of Epidemiology currently has the following plans that are relevant to public health emergency preparedness and response. These are the Strategic Plan for the Development of International Health Regulations (2005), the Action Plan for Surveillance, Prevention and Control of Communicable Diseases and the Strategic and Operational Plan for Emerging Infectious Diseases.

The National Disaster Risk Management Plan has multi-hazard approach that involves 28 ministries and agencies and covers both the government and non-government sectors. It focuses on disasters, explosions and biological disasters, chemical or radiation and environmental events. In addition to IHR core capacity requirements, the plan also covers both surveillance and response.

Currently, Situation Awareness Teams monitor key reporting events for all hazards, as well as important communicable diseases. Where necessary these teams notify Surveillance and Rapid Response Teams to investigate and provide recommendations for controlling the events.

The Ministry of Public Health can mobilize various teams from other provinces and regions for surge capacity in responding to public health emergencies of national and international concern.

Stockpiles are prepared at all levels (national, regional and local) and are mainly focused on infectious

diseases, zoonotic diseases and food safety. Offices that have direct responsibility for other hazards (such as chemical and radiation events) also have their own stockpiles. The Government Pharmaceutical Organization plays a key role in vaccine stockpiling and distribution. Resource gaps are identified and addressed through the Emergency Operations Centre.

Thailand has prioritized public health risks for major health events, including Zika and Dengue Fever outbreaks and MERS-CoV and floods. Most experts are from the Ministry of Public Health, however radiation experts are located at the Office of Atoms for Peace while chemical experts are from the Pollution Control Department and the Department of Industrial Works. University personnel are another important source of experts.

At the national level, the Department of Disaster Prevention and Mitigation prepares an annual budget for potential disasters to support emergency work all over the country. For public health emergencies, the Ministry of Public Health and the Department of Disease Control have their own central budget for managing unexpected work.

Recommendations for priority actions

- Perform national resource mapping according to national risk assessment related to the IHR.
- Streamline the management and distribution of stockpiles for responding to priority biological, chemical and radiological events.
- Provide additional resources to ensure that provincial emergency operations centres are fully functional, paying particular attention to situational awareness teams and joint investigation teams.

Indicators and scores

R.1.1 National multi-hazard public health emergency preparedness and response plan developed and implemented – Score 4

Strengths/best practices

- A long-established multi-hazard emergency response function.
- Strong policy support in the past three years.
- Systematic preparation of surge capacity and resource mobilization including training for surge staff.
- Extensive training on emergency operations centres and incident command systems for Department of Disease Control staff.
- Financial preparation for emergency responses at the national and sub-national level.
- Systematic implementation of emergency operations centres and situation awareness teams at the central and regional levels.
- After action reviews following major emergency responses, zika, MERS-CoV, followed by revision of guidelines and practices.

Areas that need strengthening/challenges

- Availability of resources for the implementation of emergency operations centres and situation awareness teams at the provincial level.
- Enhancing the capacity, through training, of subject matter experts and other emergency operations centre staffs at the Ministry of Public Health and Department of Disease Control.
- The long-term sustainability of emergency operations centres, situation awareness teams and joint investigation teams.

- Caps or reductions in the size of the civil service.
- Institutionalizing the emergency operations centre office at the Ministry of Public Health and Department of Disease Control.

R.1.2 Priority public health risks and resources mapped and utilized – Score 2

Strengths/best practices

- Availability of funding for emergency public health situations at the central and provincial level.
- Risk assessments have prioritized potential public health risks.
- The Department of Disease Control has an emerging infectious disease plan and some disease-specific operational plans, based on priority risks.
- There is an information system covering vaccine stockpiles.
- Negative pressure rooms at provincial hospitals, and designated laboratories were mapped during the Ebola Crisis.

Areas that need strengthening/challenges

- More systematic and timely resource mapping should be carried out at the national level as well as at the provincial level.
- The stockpiling system is fragmented and lacks standardization.
- Declaring 'disaster-affected areas' during disease outbreaks can be a sensitive issue when such declarations could have an impact on tourism.
- Administrative procedures can delay emergency procurement.
- Staff shortages in logistics.

Emergency response operations

Introduction

A public health emergency operations centre is a central location for coordinating operational information and resources for strategic management of public health emergencies and emergency exercises. Emergency operations centres provide communication and information tools and services, and a management system during a response to an emergency or emergency exercise. They also provide other essential functions to support decision-making and implementation, coordination and collaboration.

Target

Country with public health emergency operations centre (EOC) functioning according to minimum common standards; maintaining trained, functioning, multisectoral rapid response teams and "real-time" biosurveillance laboratory networks and information systems; as well as trained EOC staff capable of activating a coordinated emergency response within 120 minutes of the identification of a public health emergency.

Thailand level of capabilities

Thailand's National Disaster Risk Management Plan designates the National Emergency Operation Centre as the structure through which to manage emergency responses. This centre is supported by several other emergency operations centres at the ministerial, regional and local levels.

Responsibility for managing an emergency response depends on the scale and nature of disaster. This responsibility can lie with local teams or national teams, and with specific teams of specialists or high-level teams under the command of the Prime Minister. Overall, Thailand has a well-prepared high-level command structure, that is ready for many, but not all emergencies that could take place.

This structure creates some grey areas where, in an event of serious concern, there could be overlapping responsibilities and potential confusion. However the system has proven to be efficient during recent serious disasters.

There are some areas for improvement. Practical experience in specific fields such as radiation and chemical events could be increased; more standard operating procedures could be developed; and increased human and financial resources would help to keep Thailand on a constant state of alert. However the overall picture is of a network of emergency operations centres that are manned by dedicated professionals and are fully capable of managing most public health emergencies of international concern.

Recommendations for priority actions

- Increase human and financial resources to maintain the high standards at national Emergency Operation Centres, which are operational on a 24/7 basis, and improve standards at the provincial level.
- Improve the quality of table-top exercises and integrate lessons learned from these exercises into guidelines and standard operating procedures for all levels, and between various Emergency Operation Centres.
- Raise awareness on the existing Case Management Guidelines and Standard Operating Procedures for chemical and radiation emergency events at the regional, provincial and district levels and improve situational preparedness on the ground at the district level for radiation and chemical events.

Indicators and scores

R.2.1 Capacity to activate emergency operations – Score 3

Strengths/best practices

- Dedicated emergency operations centre staff at the national level who are trained in emergency management and standard operating procedures for public health emergencies of international concern.
- The emergency operations centre point of contact is available at all times to guide an emergency response.

Areas that need strengthening/challenges

- Building the capacity of emergency operations centre staff to activate a response within two hours.
- Standard operating procedures at various levels should be developed.
- Collaboration between government employees and the private sector and field workers.

R.2.2 EOC operating procedures and plans – Score 3

Strengths/best practices

- Clear incident command structure at the national level.
- Plans in place for functions including public health science (epidemiology, medical, sanitation, psychological) and public communications in the incident command structure.
- Response levels can be scaled up and mechanisms are in place to mobilize additional teams.
- Periodic development of protocols and capacity building for Situation Awareness Teams.

Areas that need strengthening/challenges

- Some forms and templates for data collection and reporting are still not user-friendly or easy to interpret.
- Situation Awareness Teams are composed of experts from different departments and ministries with different chains of command.
- Logistical support for transporting equipment and personnel during emergency situations.
- Resources for chemical and radiation emergencies.
- Some field epidemiologists may not have the capacity to deal with a highly dangerous pathogen.

R.2.3 Emergency operations programme – Score 3

Strengths/best practices

- The Department of Disease Control has strong technical knowledge and can work collaboratively with the Department of Disaster Prevention and Mitigation. The Department of Disease Control can provide good technical support to the permanent secretary's office.
- There are table-top exercises or real events at least once a year.
- Table-top exercises are informed by real events and are therefore more comprehensive and focused on likely challenges.
- Joint exercises on Middle East Respiratory Syndrome were carried out with Bamrasnaradura hospital.

Areas that need strengthening/challenges

- Provincial emergency staff need to be trained according to the national incident command structure approved by the Ministry of Public Health.

- More detailed scenarios for exercises, covering key potential problems.
- Updating standard operating procedures according to the outcomes of exercises.
- The system is not yet capable of activating a coordinated emergency response or exercise within 120 minutes of the identification of a public health emergency.

R.2.4 Case management procedures implemented for IHR relevant hazards – Score 3

Strengths/best practices

- Case management guidelines are available for priority epidemic-prone diseases, including zoonoses (leptospirosis, rabies) and food safety related events (diarrhea, cholera).
- Guidelines for the management and transport of potentially infectious patients are available and procedures are in place at the national level and at some points of entry.

Areas that need strengthening/challenges

- Insufficient or no access to case management guidelines on chemical and radiation events for general doctors and public health personnel working at the front line at the provincial and community level.
- Insufficient resources (including staff and laboratory capacity) for highly dangerous pathogens at the regional level.
- Standard operating procedures for the management and transport of potentially infectious patients cannot always be put in practice at the community level or at all points of entry.

Linking public health and security authorities

Introduction

Public health emergencies pose special challenges for law enforcement, whether the threat is manmade (e.g. the anthrax terrorist attacks) or naturally occurring (e.g. flu pandemics). In a public health emergency, law enforcement will need to quickly coordinate its response with public health and medical officials.

Target

Country conducts a rapid, multisectoral response in case of a biological event of suspected or confirmed deliberate origin, including the capacity to link public health and law enforcement, and to provide and/or request effective and timely international assistance, such as to investigate alleged use events.

Thailand level of capabilities

Thailand has multi-sectoral collaboration mechanisms in place for responding to public health events of suspected or confirmed deliberate origin. These mechanisms for collaboration between public health and security authorities are supported by legislation, policies, and memoranda of understanding.

The Royal Thai Government has identified the Ministry of Public Health as a key stakeholder in the national security system for preparedness planning for an event of intentional origin.

Various committees and working groups, including the Sub-Committee on Cooperation for the Prevention and Resolving Threats from Weapons of Mass Destruction, are in place with clearly delineated roles and responsibilities. Mechanisms are in place for security authorities to brief the Ministry of Public Health on suspected intentional health security threats. Public health and security authorities share information related to public health events.

However, there are opportunities to strengthen coordination between public health and security authorities. These include increased information sharing, developing national action plans to respond to biological, chemical and radiological threats, and capacity building related to such responses.

Recommendations for priority actions

- Increase the regularity of information sharing between public health and security authorities.
- Develop and implement a national action plan on biological, chemical and radiological threats to operationalize existing strategies and legal frameworks.
- Build capacity on preparing and responding to biological, chemical and radiological threats, including efforts to strengthen the workforce, essential infrastructure and logistics.

Indicators and scores

R.3.1 Public health and security authorities (e.g. law enforcement, border control, customs) linked during a suspect or confirmed biological event – Score 4

Strengths/best practices

- Relevant legal requirements are in place:
  - Communicable Disease Act 2015;

- Animal Epidemic Disease Act 2015;
- Animal Pathogen and Toxin 2015;
- Criminal Penal Code Amendment Act.

- Relevant strategies and plans are in place and tested:
  - National Preparedness Strategy 2014-2018;
  - National Disaster Risk Management Plan 2015;
  - Royal Police Disaster Risk Management Plan 2016;
  - National Strategic Plan for Emerging Infectious Disease Preparedness, Prevention, and Response 2017-2021;
  - A Memorandum of Understanding between the Ministry of Public Health and the National Security Council.

- There are various committees and working groups in place with clearly designated roles and responsibilities, including the:
  - Sub-Committee on Cooperation for the Prevention and Resolving Threats from Weapons of Mass Destruction;
  - Working Group on Biological Weapons;
  - Working Group on Simulation Exercises for Emergency Response on Biological Threats.

- Exercises are conducted to test national emergency response plans, information sharing between public health and security sectors, and the legal aspects of managing incidents:
  - A table-top exercise on responding to a biological threat using the 'Guidelines for Responding to Biological Threats' prepared by the Ministry of Public Health ;
  - Annual Crisis Management Exercises on enhancing emergency response readiness for various threats ;
  - Annual exercises on responding to threats at points of entry.

- Clear roles are defined and supported by the police.

- Information is shared between public health and security authorities.

Areas that need strengthening/challenges

- The development of a national action plan for emergency response to biological threats.
- A mechanism for cooperation across sectors with clearly defined roles and responsibilities, operationalizing existing legal frameworks and guidelines.
- More training and exercises that address legal issues for the public health and security sectors are needed.
- Ensuring integration of relevant units into the national information system.

Medical countermeasures and personnel deployment

Introduction

Medical countermeasures are vital to national security and protect nations from potentially catastrophic infectious disease threats. Investments in medical countermeasures create opportunities to improve overall public health. In addition, it is important to have trained personnel who can be deployed in case of a public health emergency for response.

Target

National framework for transferring (sending and receiving) medical countermeasures, and public health and medical personnel from international partners during public health emergencies.

Thailand level of capabilities

Procedures and decision-making processes in relation to sending and receiving humanitarian assistance and disaster relief are included in the Department of Disaster Prevention and Mitigation's national plan. However, this plan does not specifically focus on medical aspects of disasters.

In general, Thailand has the capacity to increase the production of medical countermeasures and distribute them with the support of the military and the private sector during emergencies.

Domestically, medical emergency response teams can be rapidly deployed to disaster areas and act as a mobile emergency room. Internationally, Thailand is a leader on disaster health management among ASEAN countries. Thai medical personnel have joined several exercises with disaster related health personnel from ASEAN member states and Japan. Thailand has also conducted table-top exercises and drills on medical countermeasures, as well as sending and receiving medical personnel, in recent years.

Thailand does not yet have formalized regional or international partnership agreements that identify procedures and decision-making related to sending or receiving medical countermeasures and international health personnel. But in practice the country has already sent medical countermeasures to the Philippines, Myanmar and Nepal, including through the support of the military.

Thailand has however made a commitment to move towards formal accreditation of Emergency Medical Teams in alignment with the WHO global initiative (incorporating the concepts of the Emergency Medical Team Coordination Cell, the Classification and Minimum Standards for Foreign Medical Team and the Emergency Medical Team Global Classification). The country is also co-hosting an initiative with the Japanese Government called the ASEAN Regional Capacity on Disaster Health Management (ARCH) Project. This Project is a platform where Thailand, along with other ASEAN Member States and Japan, can review and develop procedures and regional collaboration tools concerning the receiving and deployment of Emergency Medical Teams into disaster-affected areas, using WHO and ASEAN frameworks as guidance.

Recommendations for priority actions

- Formalize regional and international partnership agreements that identify procedures and decision making related to sending and receiving medical countermeasures and health personnel during public health emergencies.

- Strengthen practical arrangements for the deployment and receipt of emergency response teams in order to meet WHO Emergency Medical Team standards.

Indicators and scores

R.4.1 System in place for sending and receiving medical countermeasures during a public health emergency – Score 4

Strengths/best practices

- Thailand has the ability to produce most of the necessary medical countermeasures and enjoys good coordination with the military for logistical support.
- Thailand has an emerging infectious disease plan that addresses countermeasures.
- Thailand is located at the center of ASEAN, sharing borders with many states. The country has several direct flights to every ASEAN member state and many other countries outside the region.
- Thailand has sent some medical countermeasures to the Philippines, Myanmar and Nepal with the support of the military.
- The emerging infectious disease plan covers many types of infectious diseases including avian influenza, zoonotic diseases and other novel emerging infectious diseases.

Areas that need strengthening/challenges

- Providing medical countermeasures at the regional and international level (some stockpiles currently focus on non-medical countermeasures).
- Stockpiling medicines, vaccines and other sensitive equipment abroad requires consideration and a large budget.

R.4.2 System in place for sending and receiving health personnel during a public health emergency – Score 4

Strengths/best practices

- Thailand has committed to achieve accreditation of EMTs according to WHO standards (type 1 fixed and mobile teams within 1 year)
- Through the ARCH project, Thailand is also facilitating a discussion withing ASEAN Member States to develop regional mechanisms for international emergency medical team coordination in alignment with the WHO EMT methodology, including the procedures for sending and receiving health personnel during any health emergency.
- Partners such as the Japan International Cooperation Agency and WHO are providing technical and financial support to these initiatives.
- Thailand has become a leading country in disaster health management among ASEAN countries.
- Thailand has a good training and preparation system for domestic emergency medical teams. The WHO office is situated within the Ministry of Public Health.
- Thailand organized a table-top and field exercise in January 2017 to test procedures for sending and receiving emergency medical teams between ASEAN countries. A working group met in early 2017 to develop standard operating procedures in May 2017 and three further drills are planned. Thailand sent 11 personnel to Japan for training medicine training and five 5 personnel to attend Emergency Medical Team Coordination Cell lectures in India.
- Medical emergency response teams were deployed following the earthquake in Nepal in 2015.

Areas that need strengthening/challenges

- Thailand currently lacks legal provisions that would legitimize and guarantee the receipt of international medical personnel into the country.
- An international agreement that would facilitate the deployment of medical personnel to other countries is not available.
- Licensing concerns could become an important issue preventing medical personnel from operating in some countries.
- Technical and financial assistance is still required. Thailand does not have a budget allocated specifically to international medical countermeasures.
- The turnover rate among health care personnel compromises the accuracy of information on personnel that can be deployed.

Risk communication

Introduction

Risk communications should be a multilevel and multifaceted process which aims at helping stakeholders define risks, identify hazards, assess vulnerabilities and promote community resilience, thereby promoting the capacity to cope with an unfolding public health emergency. An essential part of risk communication is the dissemination of information to the public about health risks and events, such as disease outbreaks. For any communication about risk caused by a specific event to be effective, the social, religious, cultural, political and economic aspects associated with the event should be taken into account, including the voice of the affected population.

Communications of this kind promote the establishment of appropriate prevention and control action through community-based interventions at individual, family and community levels. Disseminating the information through appropriate channels is essential. Communication partners and stakeholders in the country need to be identified, and functional coordination and communication mechanisms should be established. In addition, the timely release of information and transparency in decision-making are essential for building trust between authorities, populations and partners. Emergency communications plans should be tested and updated as needed.

Target

State Parties use multilevel and multifaceted risk communication capacity. Real-time exchange of information, advice and opinions between experts and officials or people who face a threat or hazard (health or economic or social wellbeing) to their survival, so that informed decisions can be made to mitigate the effects of the threat or hazard and protective and preventive action can be taken. This includes a mix of communication and engagement strategies, such as media and social media communications, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement and community engagement.

Thailand level of capabilities

Risk communication has evolved significantly since the first detection of SARS cases in 2002, and incursion of the H5N1 highly pathogenic avian influenza in 2003. The country has progressively moved from a reactive approach, with ad hoc taskforces, towards national plans and strategies that incorporate a One Health, multisectoral and multidisciplinary approach to risk communication.

In 2012, the Director General of Department of Disease Control, made a decision to re-organize and review roles and responsibilities for risk communication, creating the Bureau of Risk Communication and Health Behaviour Development. The key objectives of this reorganization were to: enable better communications with Thai nationals and foreigners living in Thailand about existing and acute health related crises; to provide timely, clear, and credible information to key partners and stakeholders about impending public health issues of international concern; to better utilize media monitoring; and introduce the use of the 1422 hotline.

In addition, the government aimed to enhance risk communications by providing the results of risk perception surveys and research, gathering evidence and providing reports with key recommendations and guidelines, and ensuring social stability by enhancing public trust and confidence.

The risk communication structure is now well established with a clear-cut chain of command and defined roles and responsibilities. Risk communication is now embedded in the Department for Disease Control Incident Command System, and within this, there is a defined and structured approach that allows disease and hazard information to be converted into a risk analysis, risk levels to be determined and the risk communication messages to be adjusted accordingly.

Press interviews, press releases and media monitoring are conducted within one to three days for moderate risk issues and within 4-24 hours for high risk situations. Up to 30 people support the 1422 hotline and three officers are available to respond to calls in English. Communications messages are cleared at the ministerial, with ten staff allocated to preparing press releases. The Ministry of Public Health publishes a daily newsletter and a weekly disease control newsletter.

Recommendations for priority actions

- Strengthen community engagement in all hazards and all areas, especially in Southern Thailand and among vulnerable groups, tribal groups, migrants and internally displaced persons.
- Set up resources and technologies for real-time monitoring of knowledge and risk perception among the population regarding multi-level hazards (including chemical and radiation events) in order to adjust risk messages and media to suit target audiences.
- To ensure sustainability, train more emergency risk communication specialists at all levels (national, regional and provincial), and remain up to date with cutting-edge technologies in order to reach all levels of stakeholders and partners in an efficient and effective manner.

Indicators and scores

R.5.1 Risk communication systems (plans, mechanisms, etc.) – Score 4

Strengths/best practices

- Thailand has integrated risk communication and public relations into plans at all levels including the National Disaster Prevention and Mitigation Plan.
- There are strategic plans for risk communications that serve as a framework for efficient, continuous and sustainable operations at all levels.
- Multiple crisis and risk communication media, tools, plans and templates.
- Multiple communication platforms and delivery systems.
- Risk communication response plans are reviewed and revised according to lessons learnt with external partners and stakeholders.
- Key messages and communications channels are developed for different target groups.

Areas that need strengthening/challenges

- Leaders' understanding of their roles and responsibilities.
- Training to increase the number of emergency communication specialists at all levels.
- Training for staff and volunteers who operate the 1422 hotline in community engagement is needed.
- A complex, multi-stakeholder environment, with language and socioeconomic variations should be accounted for.
- New technologies and emerging infectious diseases.

R.5.2 Internal and partner communication and coordination – Score 4

Strengths/best practices

- Thailand has informally and formally coordinated communication to all agencies under the Ministry of Public Health and the Department of Disease Control during an emergency.
- Formally coordinated communications such as documents from the Emergency Operations Centre to the Director of the Offices of Disease Prevention and Control at the regional level concerning Middle East Respiratory Syndrome.
- Informal communications via websites, social media, personal contact, phone and other channels.
- Regular contact with the Emergency Operations Centre, Situation Awareness Teams, Ministry of Public Health, Public Relations Department, the Office of the Prime Minister and the government spokesperson team and other related partner agencies.
- The Department of Disease Control and related departments have set up a social mobilization and community engagement department and working group, which has considered issues such as non-communicable diseases.
- The Department of Disease Control and related departments have launched several awareness programmes such as hand washing, exercise, nutrition and well-being.

Areas that need strengthening/challenges

- Further regular engagement of regional and international partners is needed.
- Coordination of communications with partners including civil society organizations, private sector companies and other non-state actors should be strengthened.
- The knowledge and skill of risk communication officers at provincial level need to be developed.

R.5.3 Public communication – Score 4

Strengths/best practices

- Thailand's designated risk communicators and officers at all levels are trained in risk communications. At the national level, the Prime Minister or Government Spokesperson will give press interviews on health issues, for example on the Zika situation or Ebola preparedness.
- There is a tangible and efficient infrastructure for risk communication and a multisectoral collaboration approach.
- Regularly trainings, seminars and exchanges improve procedures and update risk communication skills.

Areas that need strengthening/challenges

- The overlapping authorities and activities of departments should be more clearly assigned during emergency responses.
- New channels and technologies to provide information and messages to target audiences
- Proactive risk communication through different channels in emergency situation.
- Systematic training for newly appointed spokespeople is needed at all levels.

R.5.4 Communication engagement with affected communities – Score 4

Strengths/best practices

- Opinion polls to monitor public perceptions and reactions.

- The 1422 hotline always has one officer available and can increase capacity to 30 officers during emergencies. Three English-speaking officers are available.

Areas that need strengthening/challenges

- Community engagement regarding all hazards and in all areas, especially in Southern most part of Thailand and among vulnerable groups, migrants, internally displaced persons and tribal groups.
- Health volunteer training on risk communication would help to increase the level of understanding of public perceptions on risk at the community level.
- Communications on health in border areas.
- Clarifying ownership of communications channels.

R.5.5 Dynamic listening and rumour management – Score 4

Strengths/best practices

- Polls for listening to and understanding the views of the public.
- The 1422 hotline is an effective channel both for providing information and addressing rumours and misinformation.

Areas that need strengthening/challenges

- Media monitoring to identify or respond to rumours and misinformation need to be strengthened in order to be able to respond to rumours in a more timely manner.
- Real-time monitoring of knowledge and perceptions to inform messages and channels that are suited to different target audiences.
- Ensure that there are an adequate number of provincial and community risk communication staff to provide information and monitor public responses.
- Monitoring communications sent through new platforms, such as on social media is urgently needed.

OTHER IHR-RELATED HAZARDS AND POINTS OF ENTRY

Points of entry (PoE)

Introduction

All core capacities and potential hazards apply to "points of entry" and thus enable the effective application of health measures to prevent international spread of diseases. States Parties are required to maintain core capacities at designated international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings), which will implement specific public health measures required to manage a variety of public health risks.

Target

States Parties designate and maintain core capacities at international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings) that implement specific public health measures required to manage a variety of public health risks.

Thailand level of capabilities

Thailand has designated 18 points of entry, including airports, ports and ground crossings, with capacities to develop prevent, detect and respond to public health events related to international travel and transport. The country convenes sub-committees, working groups and evaluation teams to facilitate the progress of capacity development. A self-assessment has been conducted on all designated points of entry, using the WHO core capacity assessment tool, to acquire baseline information.

Thailand has made concerted efforts to establish capacities in compliance with the IHR, through the development of a strategic plan for points of entry, an emergency preparedness programme, a public health emergency contingency plan, guidelines, standard operating procedures, training and exercises.

The country has built strategic partnerships to bring together the efforts of health and non-health actors involved in the capacity building process. These include the Office of Permanent Secretary of the Ministry of Transport, the Department of Disease Control, the Food and Drug Administration, the Department of Livestock Development, the Department of Fisheries, the Airport Authority of Thailand, the Department of Airports, the Port Authority of Thailand, the Marine Department, the Industrial Estate Authority of Thailand, the Customs Department, the Department of Highways and the Immigration Bureau.

All designated points of entry have access to appropriate medical services, including diagnostic facilities for the prompt assessment and care of ill travellers and adequate staff, equipment and premises. Some points of entry have dedicated physicians and nurses, medical supplies, medical apparatus and personal protective equipment; others have memoranda of understanding and administrative agreements with nearby hospitals and clinics. Designated points of entry have systems and arrangements to refer patients to medical facilities, with access to personal protective equipment for transporters. To ensure that points of entry are free from contamination and infection, management units work closely with other local authorities to oversee potable water supply, catering and food establishments, solid waste and sewage and vector surveillance (of

mosquitos, for example) in areas within 400 metres of points of entry. To ensure that responsible persons in partner organizations have the practical knowledge and expertise to carry out tasks in these areas, points of entry officers and the Offices of Disease Prevention and Control at the regional level have employed various methods to strengthen the capacity, such as by providing training and guidance.

Thailand has a multisectoral public health emergency plan for points of entry that covers communicable diseases and chemical and radiation hazards. These plans have been shared with key partners at points of entry, namely the Immigration Service, Food and Drug Administration, Communicable Disease Service, animal quarantine and wildlife inspection stations, the Office of Atoms for Peace, local public health offices and local offices of the Department of Disaster Prevention and Mitigation, so that they are able to act in partnership to counter public health threats falling under their respective technical mandates.

Points of entry have referral systems and facilities for assessing and transporting potentially contaminated or infected travellers. To support early detection and response, there are also memoranda of understanding, standard operating procedures, trained staff and equipment and regular exchanges of information between points of entry, health authorities and other concerned agencies; and cross-border collaboration on reporting incidences of ill travellers.

Recommendations for priority actions

- Strengthen the workforce, through training, for aircraft inspection, ship inspection and issuance of ship sanitation certificates, and for detection and preliminary response by border health officers, in all-hazard approach.
- Develop individual points of entry action plans based on the results of points of entry self-assessment and national monitoring, in order to request committed budget to close capacity gaps.
- Integrate points of entry public health emergency planning into the National Disaster Risk Management Plan 2015.

Indicators and scores

PoE.1 Routine capacities established at points of entry – Score 4

Strengths/best practices

- Points of entry committees and monitoring teams are part of the legal system, and there are memoranda of understanding with other countries.
- Thailand has carried out self-assessments, using the WHO Core Capacity Assessment Tool, to assist in implementation of the IHR at points of entry, particularly with regard to integrated projects and networks for environmental health.
- Points of entry have access to trained personnel and appropriate medical services, including facilities for the care and transportation of ill travellers.
- The 'checkpoint school' for border health officers aims to improve early detection and preliminary response at land borders.
- Appropriate medical services are available at every designated point of entry.
- A standard inspection programme has been established at airports for environmental health.
- Four decades of yellow fever screening.

Areas that need strengthening/challenges

- User-friendly information for travellers including health-related information.
- Conveyance inspections for aircraft, cruise ships and ground vehicles.

- Event-based surveillance at every point of entry.
- Covering temporary border checkpoints by using a network of international points of entry.
- Include all IHR-related hazards, as well as infectious diseases, in the surveillance and response system that operates along Thailand's borders.
- Financial constraints for regular meetings and information sharing with international points of entry in neighbouring countries.

PoE.2 Effective public health response at points of entry – Score 3

Strengths/best practices

- Each point of entry has a public health emergency contingency plan for infectious and zoonotic diseases.
- Drills and table-top exercises are conducted in conjunction with neighbouring countries.
- There is a legal framework to support public health emergency responses at points of entry, for example the Communicable Disease Act.
- SEMEX 12 best practice to combat avian influenza onboard aircraft and aviation hygiene practices for decontamination of pathogens.
- Ports have functional referral systems for avian influenza, which can be used for other communicable diseases.
- Continuous improvement on chemical emergency responses through exercises.
- Supporting Laos People's Democratic Republic with an entry and exit screening system for early detection of polio in 2016.

Areas that need strengthening/challenges

- Sharing critical information from points of entry emergency operations centres with health authorities at every level.
- Ship sanitation and issuance of ship sanitation certificates.
- Communication and coordination with affected conveyance operators.
- Integrating public health emergency plans with the National Disaster Risk Management Plan.
- Evaluation of the efficiency and effectiveness of detection and response to communicable diseases of public health significance in real situations.
- The readiness of competent authorities to detect and respond to public health events, especially radiation events.
- Strengthening the port health function through convening Communicable Disease Control Units at every point of entry.

Chemical events

Introduction

Timely detection and effective response of potential chemical risks and/or events require collaboration with other sectors responsible for chemical safety, industries, transportation and safe disposal. This would entail that State Parties need to have surveillance and response capacity to manage chemical risk or events and effective communication and collaboration among the sectors responsible for safety.

Target

States Parties with surveillance and response capacity for chemical risks or events. This requires effective communication and collaboration among the sectors responsible for chemical safety, industries, transportation and safe disposal.

Thailand level of capabilities

Thailand has a legislative and regulatory framework in place regarding factories, hazardous substances, occupational health and safety. The country is also a signatory to the main international agreements on the topic (including the Rotterdam, Stockholm and Basel Conventions).

Thailand's chemical event response framework is guided by two main national plans. The National Strategic Plan on Chemical Management and the National Disaster Risk Management Plan, which contains specific measures on chemical events.

These regulations provide for preventive measures such as the classification of hazardous substances. Thailand has also implemented licensing, risk assessment and mandatory emergency preparedness plans.

Chemical activities are surveyed and monitored under the responsibility of the relevant authorities in each area of the country.

Recommendations for priority actions

- Improve information sharing mechanisms among all sectors and stakeholders.
- Enhance and regularly test the national preparedness system for chemical substances, with international and national support.
- Integrate all national plans into a single national plan for chemical event management.

Indicators and scores

CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies – Score 4

Strengths/best practices

- Plans are developed at all levels, including local emergency plans and specific plans for factories. At the national level, the National Strategic Plan on Chemical Management and the National Disaster Risk Management Plan have specific emergency support functions for hazardous, chemical and radioactive materials.
- The presence of an Incident Command System.

Areas that need strengthening/challenges

- Both national plans should be integrated into a single, multihazard plan.
- Emergency plans at all levels need to be regularly reviewed and inter-agency standard operating procedures for chemical events management should be developed.
- Poison centres need to be accessible and adequately funded.

CE.2 Enabling environment in place for management of chemical events – Score 4

Strengths/best practices

- Legal measures and national plans are in place with identified responsible agencies.
- Tools for chemical management such as manuals, databases, laboratories, poison centres have been developed and there is a culture of information sharing and joint investigation between relevant stakeholders.
- International standards are in place.
- Communities are encouraged to participate through public scoping.

Areas that need strengthening/challenges

- Existing information sharing patterns need to be formalized through memoranda of understanding between stakeholders.
- Preparedness, human resources and technology related to chemical safety responses require strengthening.

Radiation emergencies

Introduction

To counter radiological and nuclear emergencies, timely detection and an effective response towards potential radiological and nuclear hazards/events/emergencies are required in collaboration with sectors responsible for radiation emergency management.

Target

States Parties with surveillance and response capacity for radiological and nuclear hazards/events/emergencies. This requires effective communication and collaboration among the sectors responsible for radiological and nuclear emergency management.

Thailand level of capabilities

Thailand is in a very good state of readiness for a nuclear event. There is cooperation between the various ministries and the Office of Atoms for Peace and constant readiness to provide treatment and issue warnings to the whole population. Thailand also maintains a routine of regular exercises cooperation in order to ensure an appropriate response.

There is suitable laboratory infrastructure for testing and confirming samples of air- and water-borne bodies, and a new laboratory is currently under construction. Permits are required to operate radiation equipment both in factories and in hospitals.

However, Thailand still needs to develop a stock of drugs and equipment that is sufficient for responding to a multi-dimensional event. The country should also review its capabilities and processes for large-scale decontamination and evacuating people from an area under threat.

There is a wide range of stakeholders involved in countering radiological and nuclear emergencies. These include the Office of Atoms for Peace; the Ministries of Defense, Public Health, Science and Technology and Transport, the National Security Council, the Department of Disaster Prevention and Mitigation and the Royal Thai Police.

Recommendations for priority actions

- The regulations and standard operating procedures (SOPs) that are necessary for the implementation of an existing law (the Nuclear Energy for Peace Act) need to be finalized and endorsed at the ministerial level.
- The workforce and systems need to be strengthened for surveillance and response to radio-nuclear events through trainings, table-top exercises, and drills, which are coordinated with relevant agencies and lead to refined plans and SOPs.
- Increased financing is needed to ensure that adequate staffing, equipment, and national stockpiles (for potassium iodide, for example) are available in case of a large radio-nuclear event.
- Create a sufficient stock of equipment and medication to respond to a large-scale incident.

Indicators and scores

RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies – Score 4

Strengths/best practices

- Networking with other response organizations.
- A notification function that is available at all times.
- Practical coordination and cooperation, including regular practical exercises, as well as cooperation with front line officers for detection and response.
- There is a radiation monitoring system throughout Thailand that is operated in cooperation with the customs department at major points of entry.
- Thailand has ratified the Convention of Early Notification and Nuclear Assistance and cooperates with the international community on radiation emergency issues.
- There is a National Nuclear and Radiological Emergency Plan.
- Knowledge is disseminated on radiation protection and on radiation emergency response.

Areas that need strengthening/challenges

- More cooperation with the public health sector on knowledge dissemination and the development of standard operating procedures.
- Front line officers and response organizations need more equipment to detect, deter and respond to situations.
- Standard operating procedures and regulatory documents need to be updated according to International Atomic Energy Agency standards
- Radiation emergency regulations need to be established.
- Laboratory capabilities related to radiation emergencies need to be improved, by increasing biodosimetry capacity for example.
- Advocate with policy makers to increase awareness of the importance of preparing for radiation emergencies.

RE.2 Enabling environment in place for management of radiation emergencies – Score 4

Strengths/best practices

- There are two committees regarding radiological and nuclear events (covering Radiological/Nuclear events and Weapons of Mass Destruction).
- Thailand has established an emergency response plan and an environmental laboratory to support in the event of a radiation emergency.
- Monitoring stations share measurements with the international community.
- Food contamination examinations are conducted regularly.
- Thailand has established operational intervention levels according to International Atomic Energy Agency recommendations.
- Regular exercises with all relevant organizations and good cooperation with other related teams such as environment teams to conduct sampling.

- Establishing ASEANTOM to share best practice and information related to radiation emergencies in the ASEAN region.

Areas that need strengthening/challenges

- A unified monitoring database for data from points of entry and monitoring stations throughout the country.
- The development of a clear policy to deal with health care in the case of a radiation emergency.
- Regular exercises with the public health sector.
- Establishing regulations and standards concerning environmental support in case of a radiation emergency.
- More monitoring stations are required.
- Increased cooperation with other organizations, such as local universities for collecting samples and data.

Appendix 1: JEE Mission Background

Mission place and dates

Bangkok, Thailand, 26-30 June 2017

Mission team members:

- Dr Nirmal Kandel, WHO Headquarters (team lead)
- Dr Clement Lazarus, France, Ministry for Solidarity and Health (team co-lead)
- Mr Ran Adelstein, Ministry of Health, Israel
- Dr Kip Baggett, United States of America, Centers for Disease Control and Prevention
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- Dr Maung Maung Itkem, WHO South East Asia Regional Office
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- Professor Mahmudur Rahman, Bangladesh
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- Dr Ninglan Wang, WHO Headquarters
- Ms Evelyn Wesangula, Kenya, Ministry of Health

Objective

To assess Thailand's capacities and capabilities relevant to the 19 technical areas of the JEE tool for providing baseline data to support Thailand's efforts to reform and improve their public health security.

The JEE process

The JEE process is a peer-to-peer review. The entire external evaluation, including discussions around the scores, the strengths, the areas that need strengthening, best practices, challenges and the priority actions should be collaborative, with JEE team members and host country experts seeking full agreement on all aspects of the final report findings and recommendations.

Should there be significant and irreconcilable disagreement between the external team members and the host country experts, or among the external, or among the host country experts, the JEE team lead will decide the outcome; this will be noted in the final report along with the justification for each party's position.

Preparation and implementation of the mission

Thailand completed its self-evaluation over the course of several months and submitted the final workbook in early June. For the preparation of the mission, multiple teleconferences were held between the team leaders, national focal points and the WHO Country Office in order refine the agenda and further details

of the mission. Logistical arrangements were made by the national focal points, WHO Country Office, WHO South East Asia Regional Office and WHO Headquarters.

Limitations and assumptions

- The evaluation was limited to one week, which limited the amount and depth of information that could be managed.
- It is assumed that the results of this evaluation will be publically available.
- The evaluation is not just an audit. Information provided by <host country> will not be independently verified but will be discussed and the evaluation rating mutually agreed to by the host country and the evaluation team. This is a peer-to-peer review.

Key host country participants and institutions

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- Mrs Varaporn Thientong, Department of Disease Control
- Ms Kanoktip Thiparat, Department of Disease Control
- Ms Ladda Thummagarun, Department of Disease Control
- Ms Panadda Tungsawas, Food and Drug Administration
- Dr Kumnuan Ungchusak, Department of Disease Control
- Dr Sumonmal Uttayamakul, Department of Disease Control
- Mr Patikom Vivatthananon, Department of Disease Control
- Mr Atthawit Watcharathammarak, Department of Disease Control
- Mrs Arthicha Wongkumma, Department of Disease Control
- Dr Jurai Wongsawat, Department of Disease Control
- Mr Wattanapong Wootta, Department of Medical Sciences
- Ms Nirandorn Yimchoho, Department of Disease Control
- Dr Thitipong Yingyong, Department of Disease Control
- Dr Pornsak Yoocharoen, Department of Disease Control
- Dr Kasemsuk Yothasamutr, Lerdsin Hospital, Department of Medical Services
- Ms Kittima Yuddhasaraprasid, National Institute for Emergency Medicine

Ministry of Industry

- Mr Supakit Boonsiri, Department of Industrial Works
- Ms Rikan Chatsakulvilai, Department of Industrial Works
- Mr Naratip Lauhatirananda, Department of Industrial Works
- Ms Krittiya Meanjai, Department of Industrial Works
- Mrs Napaphun Nakswatdi, Department of Industrial Works
- Mrs Anong Paijitprapapon, Department of Industrial Works
- Ms Rattana Ruktrakul, Department of Industrial Works
- Ms Piyaporn Thiencharoen, Department of Industrial Works

Royal Thai Police

- Pol. Lt. Col. Delaila Boonyacholasin, Police General Hospital
- Pol. Lt. Col. Jetsada Burinsuchart, Foreign Affairs Division
- Pol. Lt. Sompat Jongsatien, Office of Police Strategy
- Pol. Col. Panwadee Rattanasumawong, Police General Hospital
- Pol. Lt. Col. Pongsanpetch Santivejchakum, Office of Police Strategy

Office of Attorney General

- Mr Kulachai Thonglongya, International Affairs Department

Bangkok Metropolitan Administration

- Ms Potjana Chularat, Taksin Hospital
- Acting SubLt. Nattee Jobdee, Health Department
- Dr Pailin Phupat, Health Department

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- Asst. Prof. Kumthorn Malathum, M.D., Faculty of Medicine Ramathibodi Hospital
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- Dr Supaporn Wacharapluesadee, Faculty of Medicine Chulalongkorn Hospital

Food and Agriculture Organization of the United Nations (FAO)

- Dr Wantanee Kalpravidh
- Dr Kachen Wongsathapornchai

Thailand MoPH - U.S. CDC Collaboration

- Dr Sopon Iamsirithaworn

US Agency for International Development (USAID)

- Dr Sudarat Damrongwatanapokin, International Affairs Department

Private Sector

- Mr Chitipat Benjamapa, Thai Airways International Public Company Limited
- Ms Nutjanart Jundaeng, Bangkok Airways Public Company Limited
- Mr Narongchai Tanadchangsaeng, Bangkok Airways Public Company Limited

Key Participating Institutions

- Office of the Prime Minister (Office of The National Economic and Social Development Board, Office of the National Security Council)
- Ministry of Agriculture and Cooperatives (Departments of Agriculture, Fisheries and Livestock Development, National Bureau of Agricultural Commodity and Food Standards)
- Ministry of Defence (Medical Department, Royal Thai Army, Medical Services, Royal Thai Air Force, Naval Science Department, Royal Thai Army Chemical Department, Defence Science and Technology Department)
- Ministry of Digital Economy and Society (Office of the National Digital Economy and Society Commission)
- Ministry of Education (Permanent Secretary Office, Office of the Higher Education Commission)
- Ministry of Finance (Thai Customs)
- Ministry of Foreign Affairs (Thailand International Cooperation Agency, Department of Treaties and Legal Affairs, Department of International Organizations, Department of Treaties and Legal Affairs)
- Ministry of Industry (Department of industrial works)
- Ministry of Interior (Department of Disaster Prevention and Mitigation)
- Ministry of Natural Resources and Environment (Pollution Control Department, Pollution Control Department, National Park, Wildlife and Plant Conservation Department, The Zoological Park Organization under the Royal Patronage of His Majesty the King)
- Ministry of Public Health (Permanent Secretary Office, Department of Medical Services, Department of Disease Control, Department of Medical Sciences, Department of Medical Service Support, Department of Health, Food and Drug Administration, Government Pharmaceutical Organization, National Health Security Office, National Institute for Emergency Medicine)
- Ministry of Science and Technology (Office of Atoms for Peace, National Science and Technology Development Agency)
- Ministry of Tourism and Sports (Tourism Authority of Thailand)
- Ministry of Transport (Office of the Permanent Secretary, The Department of Land Transport, The Department of Highways, Marine Department, Department of Airports, Department of Airports, The Civil Aviation Authority of Thailand, Airports of Thailand Public Company Limited, Port Authority of Thailand)
- The Healthcare Accreditation Institute
- Coordinating Unit for One Health

- National universities
- Office of The Attorney General
- Ramathibodi Poison Centre
- Royal Thai Police (Strategy Division Office of Police Strategy, Police General Hospital, Foreign Affairs Division)
- Bangkok Metropolitan Administration
- Thailand One Health University Network

Supporting documentation provided by host country

Before the mission, the Thailand team prepared a comprehensive self-evaluation covering all 19 technical areas. This self-evaluation was provided to the external team ahead of the mission. In addition, the Thailand team prepared presentations on each technical area that were delivered during the mission.

Relevant documentation for each of the technical areas is as follows:

National Legislation

- Report on the assessment of Thai laws for the implementation of the IHR
- Communicable Diseases Act (2015)
- Control Of Animal Slaughter For The Distribution Of Meat Act (2016)
- Pathogens And Animal Toxins Act (2015)
- Disaster Prevention and Mitigation Act (2007)
- Animal Epidemics Act (2015)

IHR coordination, communication and advocacy

- Cabinet Resolution of 5 June 2007 (assigning the Ministry of Public Health to coordinate IHR implementation with all relevant ministries and other government organizations)
- Order of Ministry of Public Health on National IHR committee
- Order of National IHR committee on Surveillance and Response
- Order of National IHR committee on Laboratory capacity
- Order of National IHR committee on Points of Entry
- Order of National IHR committee on IHR coordination
- Order of National IHR committee on Global Health Security Agenda
- Thailand's National IHR Strategic Plan 2017-2021

Antimicrobial Resistance

- Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021
- Thailand's National Strategic Plan for Tuberculosis Prevention, Treatment and Care 2017-2021
- National Infection Control Committee on Defining Criteria for Nosocomial Infection Surveillance

Zoonotic Diseases

- National Strategic Plan for Emerging Infectious Disease Preparedness, Prevention and Response (2017-2021)
- Memoranda of Understanding between five departments to strengthen the surveillance and investigation system for emerging infectious diseases and occupational diseases
- Memoranda of Understanding between eight organizations on the Implementation of One Health Initiative for National Health Security
- National Health Assembly Resolution on Multi-sectoral Collaboration for One Health: Human, Animal and Environment
- Animal Epidemics Act (2015)
- Communicable Disease Act (2015)
- Animal Health Operation Plan (2016 and 2017)
- Surveillance and Rapid Response Team guidelines and standard operating procedures (2012)
- Her Royal Highness Princess Chulabhorn's project and action plan on Disease-free Animals, Safe Humans from Rabies

Food Safety

- Food Act (1979)
- National Food Commission Act (2008)
- Communicable Disease Act (1980)
- Public Health Act (1992)
- Agricultural Commodity Standards Act (2008)
- Fisheries Act (1947)

Biosafety and Biosecurity

- Pathogen and Animal Toxin Act (1982 and 2015)
- Occupational Safety, Health and Environment Act (2011)
- Public Health Act (1992 and 2007)
- Report of the WHO Emerging and Dangerous Pathogens Laboratory Network visit to National Institute of Health, Thailand (2016)
- Laboratory biosafety manual and laboratory biosafety manual of the National Institute of Animal Health
- Biosafety and biosecurity internal audit by the National Institute of Animal Health
- Mission report on biosafety risk assessment at the National Institute of Animal Health by Dr. Stuart Blacksell (2012 and 2014)

National Laboratory System

- National Policy on Health Laboratory (2017)
- Pathogen and Animal Toxin Act (2015)
- Communicable Disease Act (2015)

- Sanatorium Act (2016)
- National Health Security Act (2002)
- Handbook of Specimen Collection and Laboratory services, National Institute of Health (2016)
- Guideline for Specimen Collection and Biosafety, National Institute of Health (2014)
- Guideline for Emerging Infectious Disease Laboratory Network, National Institute of Health (2015)
- Animal Epidemics Act (2015)
- Animal for Scientific Work Act (2015)

Realtime Surveillance

- Handbook on National Disease Surveillance
- List of high priority communicable diseases, according to Communicable Disease Act
- Guidelines of the R506 reporting system
- Guidelines and standard operating procedures for Surveillance and Rapid Response Teams
- Report from Surveillance and Rapid Response Team evaluation
- Documents for training at the regional or provincial levels
- Manual on event-based surveillance from the National Strategic Plan for Emerging Infectious Diseases
- Guidelines for the Priority Disease Surveillance Reporting System

Reporting

- Letter of IHR National Focal Point nomination in 2015
- Letter of nomination for World Organisation for Animal Health focal point in 2011
- WHO situation reports
- Memoranda of Understanding between six countries on the Mekong Basin Disease Surveillance network

Workforce Development

- Ten year strategic plan on National Health Manpower (2007-2016)
- Human resource management towards the role of National Health Authority (Unpublished paper)
- Draft of the five-year action plan on strategic of human development, Ministry of Public Health
- Curricula and manuals from training programmes

Preparedness

- National Disaster Risk Management Plan
- Action plan for Surveillance, Prevention and Control of Communicable Diseases (2016-2018), based on the Communicable Disease Act (2015)
- National Strategic and Opeational Plans for Emerging Infectious Disease Preparedness, Prevention and Response (2013-2016)
- Draft National Strategic Plans on Medical & Public Health Emergency Management (2017-2020)
- Strategic Plan for the Development of the International Health Regulations (2017-2021)

- Disaster compensation guidelines
- Department of Disease Control all-hazard plan (2016)

Emergency Response Operations

- Disaster prevention and mitigation Act 2017
- Floor Plan of National Disaster Command Headquarters/ Command Center
- National Disaster Risk Management Plan (2015)
- Guidelines for the development of emergency operation centres and incident command systems, Department of Disease Control (2016-20121)
- Report on Lesson-learned from preparedness to prevent and control MERS-CoV (2015)
- Data collection and reporting forms from emergency operation centres
- Standard operating procedures for Situational Awareness Teams

Linking public health and security services

- National Security Policy (2015 - 2021)
- National Disaster Risk Management Plan (2015)
- Royal Thai Police Disaster Risk Management Plan (2016)
- National Strategic Plan for Emerging Infectious Disease Preparedness, Prevention and Response (2017 - 2021)
- Communicable Disease Act (2015)
- Ministry of Public Health Order
- Department of Disaster Prevention and Mitigation Order

Medical Countermeasures

- Record of Discussion (RD) on the ARCH Project
- ARCH Project Inception Report
- National Plan of the Department of Disaster Prevention and Mitigation

Risk Communication

- The National Public Relationship Policy and Plan (2016-2021)
- Ministry of Public Health Public Relations Strategic Plan (2017-2021)

Points of Entry

- National Disaster Risk Management Plan (2015)
- Enhancement and Conservation of the National Environmental Quality Act (1992)
- Animal Epidemic Act (2015).
- Fisheries Act (1947 and 2015)
- CITES Act (1992).
- Customs Act (1926 and 2014)

- Act on the Facilitation of Cross-Border Transport (2013)
- Immigration Act (1979)
- Food Act (1979).
- The Medical Devices Act (2008)
- The Hazardous Substance Act B.E.2535 (1992)
- The Narcotics Act (1979)
- The Psychotropic Substances Act (1975)
- The Cosmetics Act (2015)
- The Drug Act (1967)
- Plant Quarantine Act (2008)
- Plant Species Act (2007)
- Fertilizer Act (2007)
- Toxic Substance Act (2008)
- Para-Rubber Act (2015)

Chemical Events

- Hazardous Substance Act (1992)
- Factory Act (1992)
- Occupational Safety, Health and Environment ACT (2011)
- Improvement and Conservation of the National Environmental Quality Act (1992)
- The Fourth National Strategic Plan on Chemical Management 2012-2021
- National Disaster Risk Management Plan

Radiation Events

- International Atomic Agency General Safety Requirements Part Seven
- Manual for First Responders to a Radiological Emergency
- National Nuclear and Radiological Emergency Plan
- Thailand Emergency Preparedness Review report

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